

GOVERNMENT OF KERALA

*
**

**
*

SAMPLE REGISTRATION - KERALA RURAL

ANNUAL REPORT 1987

No. 25

*
**

**
*

DEPARTMENT OF ECONOMICS AND STATISTICS

TRIVANDRUM

1989

P R E F A C E

The sample registration system was introduced in all the States of India under the directions of the Registrar General of India with the objective of obtaining quick and reliable estimates of vital rates in the country regularly.

This report present the results of the study in rural areas of Kerala state for the year 1987. The estimates of vital rates viz. crude birth and death rates, infant mortality rates etc. and also the details of marriages obtained through the study are included in this report.

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

P.L. Sreedevi Amma
Director of Economics & Statistics

Trivandrum,
15--6--1989.

CONTENTS

Chapter 1	-	<i>Introduction</i>
Chapter 2	-	<i>Population and its growth</i>
Chapter 3	-	<i>Measures of fertility</i>
Chapter 4	-	<i>Mortality measures</i>
Appendix	-	<i>Table 1 to 31</i>

...

SAMPLE REGISTRATION OF BIRTHS AND DEATHS IN KERALA RURAL - 1987

Chapter I - Introduction

Sample registration system has been recognised as a unique technique for obtaining quick and reliable data on vital rates, in the context of deficiencies in the statutory registration system. The agency for the study in rural areas of the state is the Department of Economics and Statistics and in urban areas the Census Department, as per the directions of the Registrar General of India. This report is based on the findings of the survey in 150 samples selected in rural areas of the state for the year 1987.

The sample registration system, basically a sample survey designed to obtain quick and reliable data on vital rates, was introduced in the state as a pilot project during 1964-'65 in 20 rural and 5 urban samples. The full fledged scheme was introduced on first July 1965 covering 150 samples in rural areas of the state on a regular basis. The samples thus selected were retained for the study upto the year 1982. Out of these 150 samples, 75 samples were replaced during 1982 and the remaining 75 were replaced during the year 1983 for the study. The new samples were selected after stratifying the census villages into four types according to the population of 1981 census viz:- below 500, 500 to 999, 1000 to 1999 and 2000 and above under the two regions of the state consisting of all the northern districts of the state beyond Trichur as northern region and the remaining districts from Trivandrum to Trichur as southern region and allocating samples in different strata in proportion to the population of the strata 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 31 appended to this report.

1.2. Staff

One hundred and fifty part-time Enumerators were engaged in the regular field work for registering the births and deaths occurred in each sample and for reporting the details to this office during each month and 15 Statistical Assistants/Computers deputed from Census Department for conducting half yearly surveys in all the 150 samples selected in the state. The supervision of field work and the reverification of the unmatched and partially matched events noticed in the samples were done by the Additional District Officers of this Department in each district. A Regional Officer, a Research Assistant, a Computer from Census Department and two Compilers attended the work relating to sample registration system at the state Headquarters.

1.3. Field work

Originally a base line survey was conducted in all the sample units selected for fixing the resident population. The details of births and deaths occurring in these samples were registered by the Enumerators on a regular basis through informants and house visits and reported the

details to the district and state headquarters every month. The Statistical Assistants/Computer Supervisors conducted half yearly surveys independent of the Enumerators for updating the population and for collecting details of births and deaths. The data collected by both the Enumerators and Supervisors were matched at the district headquarters and the re-verification of unmatched and partially matched events was done by the Additional District Officers concerned and the results of the survey furnished to the headquarters.

1.4. Overlapping Survey

During each half yearly survey, the data relating to the previous half year were also collected in order to bring out the events missed, if any, by both the Enumerator and Supervisor during the previous half year. By this procedure 151 births and 29 deaths were detected during the year.

1.5. Intensive enquiry

In 25 samples of the state identified as deficient units for the year, an intensive enquiry was conducted by the Additional District Officers of this Department through which 21 births and 5 deaths were detected.

Chapter II - Population and its growth

The estimated population of Kerala rural was 2,22,77,813 as on 1.7.'87 and 2,24,35,709 as on 1.1.'88 recording an increase of 0.71 percent during the second half of 1987 as against 0.76 percent during the same period of the previous year. The increase in population during the period in northern region was 1.12 percent and that in Southern region was 0.41 percent as against 0.87 percent and 0.69 percent respectively during the previous year. Mid-year population has shown an increase of 1.34 percent over the previous year.

2.2. Sex ratio and percentage distribution of population by age group

The sex ratio and percentage distribution of population for different age groups for the years 1971, 1986 and 1987 are presented in Table 4 appended to this report. The sex ratio is seen decreased from 1065 in 1986 to 1059 in 1987. Children below the age 14 constitute 32.4% of the total population during 1986, while it has come down to 32 percent during 1987.

2.3 Religion-wise population

Percentage of estimated population for Hindus, Muslims and Christians for the year were 57.37, 21.29 and 21.34 respectively while the percentages were 57.16, 20.97 and 21.87 respectively during the previous year.

Chapter III - Measures of fertility

The crude birth rate which is the most common measure of fertility, age specific fertility rate, total fertility rate, gross reproduction rate and net reproduction rate for the year 1987 have been estimated and presented in this chapter.

3.2 Crude birth rate

Crude birth rate is defined as the number of live births per 1000 of mid-year population. Only the births to the usual residents in the area are taken into account for calculation of vital rates.

The crude birth rate for Kerala rural for the year 1987 was estimated as 21.5 which is 1.1 less than that of the previous year. Birth rate in northern region is seen always higher than that of the southern region. Birth rates in northern and southern regions were 24.6 and 19.2 respectively during 1987 while the rates were 27.0 and 19.4 respectively during the previous year. Birth rates for Kerala rural and India rural for the years 1981 to 1987 are given in table A1.

Table A1. Crude birth rate for Kerala rural and India rural for the years 1981 to 1987.

Year	Kerala - Rural			India Rural
	Northern Region	Southern Region	Total	
1	2	3	4	5
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	35.1
1985	27.2	20.4	23.2	34.0*
1986	27.0	19.4	22.6	34.1*
1987	24.6	19.2	21.5	33.5*

*Provisional.

From Table A1, it can be seen that the birth rate in the northern region has, decreased by 2.4 during the year 1987 compared to 1986. This may be due to the acceleration of family welfare activities in the northern region of the state.

3.3. Birth rate of neighbouring states

The birth rates for rural areas and rural and urban together estimated provisionally for the year 1987 by the Registrar General of India in respect of the neighbouring states of Kerala and the whole of India are given in Table A2.

Table A2. Birth rates of neighbouring states

States	Rural	Rural & Urban combined
1	2	3
Andhra Pradesh	30.4	29.9
Karnataka	29.8	28.9
Tamil Nadu	23.9	23.6
Kerala	21.2	21.3
All India	33.5	32.0

Comparing the birth rates in rural areas of the neighbouring states, it can be seen that Andhra Pradesh recorded the highest birth rate viz 30.4 during the year 1987, Karnataka 29.8, Tamil Nadu 23.9 and Kerala the lowest, as in the previous year.

3.4 Birth rates by religion

The birth rates among the three religious groups Hindus, Muslims and Christians in the state for the year estimated separately for the two regions are given in table 14 appended.

Comparing the birth rates among the three religions in the State, Muslims recorded the highest birth rate 29.6, Christians recorded the lowest 18.5 and Hindus 19.6 while the corresponding rates ^{19.6} 31.4, 19.6 and 20.5 respectively during the previous year.

The Muslims in the northern regions who forms 34.9 percent of the total population in the area and 68.8 percent of the total Muslim population in the state recorded the highest birth rate 33.1 as against 34.7 during the previous year. The lowest birth rate 18.2 is recorded by Christians in the northern regions who constitute 8.0 percent of the total population in the region and 15.7 percent of the total Christian population in the state. During the previous year, Christians in the southern region recorded the lowest birth rate 19.0.

3.5 Distribution of sample villages under different birth rates

The distribution of sample villages by crude birth rates for the year 1987 and previous two years are given in table 12 appended. It is seen that 34 samples (55.7 percent) in northern region and 79 samples (88.8 percent) in the southern region were having birth rates less than 24. The birth rate for the state 21.5 falls in the group 20 and less than 24 during the year 1987 also, as in the previous year. The highest birth rates recorded by two samples in the northern region falls in the group 40 and less than 44 and two samples in the southern region falls in the group 32 and less than 36. The number of samples having birth rate below 16 is 5 in northern region and 21 in southern region while the numbers were 2 and 22 respectively during the previous year.

3.6 Age specific fertility rate

Age specific fertility rate can be defined as the number of live births in an year to 1000 women of specific age group. Age specific fertility rates for the year 1987 for the two regions are given in table 8 appended. For comparison of rates, the age specific fertility rates for the years 1981 to 1987 are given in table A3.

Table A3 Age specific fertility rates in Kerala-rural for the year 1981 to 1987

Age group	1981	1982	1983	1984	1985	1986	1987
1	2	3	4	5	6	7	8
15 to 19	39.3	31.8	34.9	34.5	33.7	36.7	31.3
20 to 24	175.9	176.5	172.7	179.2	177.0	166.1	171.6
25 to 29	166.2	168.0	161.0	168.0	155.4	147.1	140.0
30 to 34	98.6	95.4	87.5	74.6	73.0	67.5	55.1
35 to 39	53.9	53.8	42.5	35.8	29.6	27.4	24.4
40 to 44	19.4	18.1	13.6	14.1	14.2	11.2	7.2
45 to 49	4.9	3.8	3.1	4.0	1.8	2.9	2.1

3.7 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. Age specific marital fertility rates for the year 1987 are given in table 8 appended. Age group 20 to 24 recorded the highest marital fertility rate 328.1 during 1987 whereas the highest marital fertility rate recorded in the same age group during 1986 was 320.1.

3.8 General fertility rate (G.F.R)

General fertility rate is the number of live births in an year to 1000 women in the reproductive age group 15 to 49. General fertility rates for the two regions separately are given below:

Northern region	: 91.6
Southern region	: 67.7
State	: 77.4

General fertility rates for the years 1981 to 1987 are given below. It can be seen that there is a decreasing trend in the general fertility rate.

G.F.R	1981	1982	1983	1984	1985	1986	1987
	92.2	90.8	87.1	87.5	84.4	81.0	77.4

3.9 Total fertility rate (T.F.R)

Total fertility rate denotes the average number of 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 rates of the year. The total fertility rates for the two regions separately are given below.

Northern region	: 2.6
Southern region	: 1.9
State	: 2.2

Total fertility rate of Kerala-rural for the years 1981 to 1987 are given below:

T.F.R	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	2.8	2.7	2.6	2.6	2.4	2.3	2.2

3.10 Gross reproduction rate (G.R.R)

Gross reproduction rate is 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 1981 to 1987 are given below:

G.R.R	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	1.3	1.3	1.2	1.3	1.2	1.1	1.1

3.11 Net reproduction rate (N.R.R)

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 specific fertility rates and mortality conditions during the year. It is obtained by multiplying the age specific female birth rates of the child bearing age groups by corresponding proportion of survivors, as per life table for females (L_x/l_x) and then repeating the process as in gross reproduction rate. Net reproduction rate for the years 1981 to 1987 are given below:

N.R.R	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	1.21	1.22	1.15	1.26	1.20	1.09	1.05

3.12 Still birth rate (S.B.R)

Still birth rate is the number of still births to 1000 births (both live births and still births). The still birth rate was estimated as 11.1 for the year 1987. Still birth rate for northern region was 16.2 and for southern region 6.3. The corresponding rates for the previous year were 15.3 and 12.6 respectively. Still birth rates for males and females were estimated as 13.7 and 8.4 respectively whereas the rates

were 11.9 and 16.2 respectively during the previous year. The still birth rates for the years 1981 to 1987 are given below:

S.B.R	1981	1982	1983	1984	1985	1986	1987
	20.8	12.6	13.5	10.5	13.3	14.0	11.1

3.13 Order of birth

The percentage distribution of births by age of mother and order of birth of child is given in table 11 appended. 88.7 percent of the births came under first three orders of births, while it was 86.1 percent during the previous year. The birth under seventh order and above during the year was 2.0 percent as against 2.3 percent during the previous year.

3.14 Births by type of medical attention received

The percentage distribution of births by type of medical attention received during the year 1981 to 1987 are given in table A4.

Table A4 Percentage distribution of births by type of medical attention received for the years 1981 to 1987

Year	Institu- tional	Trained profes- sional	Untrain- ed pro- fessional	Non-pro- fessional	Not stated
1	2	3	4	5	6
1981	47.8	26.7	23.6	1.7	0.2
1982	59.1	21.8	18.2	0.9	-
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	-

More and more people were seen utilising the institutional facilities provided for maternal and child health year by year. The distribution of number of births by various medical attention received is given in table 10 appended. It is seen that institutional medical attention received during the year in northern region and southern region were 69.8 and 94.7 percent respectively where as the services of untrained professional used were 17.3 and 1.5 percent respectively.

3.15 Sex-ratio at birth

Sex-ratio at birth is defined as the number of male children born to 100 female children. Sex-ratio at birth for the years 1981 to 1987 are given below:

: 8 :

Sex-ratio	$\frac{1981}{108.8}$	$\frac{1982}{107.2}$	$\frac{1983}{108.7}$	$\frac{1984}{100.8}$	$\frac{1985}{100.2}$	$\frac{1986}{110.7}$	$\frac{1987}{104.2}$
-----------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Sex-ratio at birth in northern region and southern region were 102.2 and 106.2 respectively as against 112.6 and 108.9 respectively during the previous year.

3.16 Child woman ratio (C.W.R)

Child woman ratio is defined as the estimated number of children in the age group 0 to 4 years per 1000 women in the reproductive age group 15 to 49.

Estimated number of children in the age group 0 to 4 : 2369617

Estimated number of women in the age group 15 to 49 : 6187749

Child woman ratio for the years 1981 to 1987 are given below:

C.W.R.	$\frac{1981}{441}$	$\frac{1982}{401}$	$\frac{1983}{400}$	$\frac{1984}{390}$	$\frac{1985}{377}$	$\frac{1986}{378}$	$\frac{1987}{383}$
--------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------	--------------------

3.17 Comparison between the vital rates under sample registration system and civil registration system

Civil registration system is a statutory system to record all the events of births and deaths. On a review of data on vital rates under sample registration system and civil registration system, it can be seen that the performance of civil registration system has to improve to a great extent. The birth rates and still birth rates worked out from the data on civil registration system and sample registration system for the years 1981 to 1987 are given in table A5.

Table A5 Vital rates under civil registration system and sample registration system -Kerala-rural for the years 1981 to 1987

Year	Birth-rate		Still birth rate	
	Civil registration	Sample registration	Sample registration	Civil registration
1	2	3	4	5
1981	15.9	24.7	5.1	20.8
1982	15.4	24.3	5.1	12.6
1983	14.3	23.5	3.9	13.5
1984	13.8	23.7	4.9	10.5
1985	13.6	23.2	NA	13.3
1986	15.1	22.6	NA	14.0
1987	13.5	21.5	NA	11.1

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 27 appended. The highest rate of first marriage to 1000 female population during the year was 70.9 in the age group 20 to 24 as against 73.9 in the same age group during the previous year. In the case of males, the highest rate was 71.4 in the age group 25 to 29 as against 69.5 in the same age group during the previous year. The rate of marriage of females in the age group 15 to 19 has been decreased by 1.2 over the previous year. Of the total marriages 3.5 percent were remarriages while it was 3.7 percent during the previous year. The mean age at marriage for males and females were seen as 27.1 and 21.9 respectively where as the mean age at marriage during the previous year were 26.9 and 21.6 respectively.

Chapter IV - Mortality measures

The crude death rate, age specific death rates and infant mortality rate for the year 1987 have been estimated and presented in this chapter.

4.2 Crude death rate

The crude death rate is defined as the number of deaths per 1000 of mid-year population. As in the case of birth, deaths occurred to usually resident members only were taken into account for calculating the death rate. The crude death rate for the year in Kerala rural is seen as 6.1 as against 6.0 during the previous year. The same death rate 6.1 was noticed in northern and southern regions where as the death rates were 6.0 and 6.1 respectively during the previous year. The crude death rates for Kerala-rural and All India rural for the years 1981 to 1987 are given in table B1 below:

Table B1 Crude death rate in Kerala rural and all India rural for the years 1981 to 1987

Year	Kerala-rural			All India rural
	Northern region	Southern region	Combined	
1	2	3	4	5
1981	6.9	6.1	6.5	13.6
1982	6.3	5.6	5.9	13.1
1983	7.2	6.2	6.6	13.1
1984	6.9	6.0	6.4	13.7
1985	6.8	6.4	6.6	*12.9
1986	6.0	6.1	6.0	*11.1
1987	6.1	6.1	6.1	*10.8

* Provisional.

4.3 Death rates of neighbouring states

The death rates in rural areas and rural and urban combined estimated provisionally by the Registrar General of India in respect of the neighbouring states and All India are given in table B2.

Table B2 Death rates of neighbouring states and all India

States	Rural	Rural and Urban combined
1	2	3
Andhra Pradesh	10.4	9.7
Karnataka	9.6	8.7
Tamil Nadu	11.0	9.7
Kerala	6.0	6.0
All India	11.9	10.8

In rural areas, Tamilnadu recorded the highest death rate 11.0 and Kerala recorded the lowest death rate 6.0 as usual. When the death rates for rural and urban together are compared Andhra Pradesh and Tamil Nadu recorded the highest death rate 9.7 and Kerala the lowest death rate 6.0 as usual.

4.4 Death rates among religions

The death rates among Hindus, Muslims and Christians are given in table 14 appended. The highest death rate 7.1 was recorded among Hindus in the northern region, as in the case of the previous year. The lowest death rate 3.4 was recorded among Christians in the same region as before. At state level, the highest death rate 6.6 was among Hindus and lowest death rate 4.9 among Muslims as in the previous year. It is seen that the death rate for Muslims has been decreased and the rates for Hindus and Christians have been increased during the year.

4.5 Age specific death rate

Age specific death rate is the number of deaths in a specific age group among 1000 persons of that age group in an year. The age specific death rates for different age groups according to region and sex are given in table 17 appended. As usual, the age specific death rates were highest 85.4 in the age group 70 and above and lowest 0.5 in the age group 10 to 14 during the year 1987 also. The age specific death rates for the age group 70 and above for northern region and southern region were 92.3 and 82.2 respectively as against 85.7 and 81.9 respectively during the previous year. Also, it is seen that age specific death rates for the age group 70 and above for males and females have been increased to 94.6 and 78.4 respectively from 85.7 and 69.1 respectively during the previous year. The difference between the age specific death rates for males and females in the age group 70 and

above was 16.2 during the year while it was 16.6 during the previous year keeping the same trend. The death rates for males and females were 7.0 and 5.2 respectively during this year while the rates were 6.9 and 5.2 during the previous year.

4.6 Infant mortality rate

Infant mortality rate is defined as the estimated number of deaths of infants 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 2) appended. The infant mortality rates for Kerala rural for the years 1981 to 1987 are given below.

Infant mortality rate	1981 40.4	1982 30.3	1983 38.9	1984 30.1	1985 33.0	1986 28.6	1987 27.0
-----------------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------

Infant mortality rates in northern and southern region were 28.1 and 26.0 respectively as against 31.5 and 25.8 respectively during the previous year. In both the regions, infant mortality rates have shown a decreasing trend.

4.7 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 21.4 during the year 1987 while it was 22.2 during the previous year.

4.8 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 17.3 during the year while it was 18.4 during the previous year. The peri-natal, neo-natal and infant mortality rates according to sex and regions are given in table B3 below.

Table B3 Peri-natal, neo-natal and infant mortality rates of Kerala - rural

Region	Mortality rates								
	Peri-natal			Neo-natal			Infant		
	M	F	All	M	F	All	M	F	All
1	2	3	4	5	6	7	8	9	10
Northern Region	18.3	17.8	18.0	21.9	21.6	21.8	29.2	27.0	28.1
Southern Region	17.1	15.9	16.6	22.6	19.6	21.1	25.6	26.1	26.0
State	17.7	16.8	17.3	22.3	20.6	21.4	27.5	26.5	27.0

4.9 Distribution of samples according to death rate of each sample

The distribution of samples according to death rates for the year 1987 and previous two years are given in table 20 appended. During the year under report 39 samples forming 63.9 percent of the northern region and 62 samples forming 69.7 percent of the southern region recorded the death rates less than 7 as against 65.6 and 68.5 percent respectively during the previous year. At state level, 101 samples, the same number as in the previous year has recorded the death rate less than 7 during the year. The number of samples recorded death rates 11 and above during the year for northern and southern regions were the same viz. 2 whereas the number of samples were 1 and 2 respectively during the previous year. The percentages were 2.7 and 2.0 respectively during the current year and previous year for the state as a whole.

4.10 Medical attention before death

The percentage distribution of deaths according to medical attention received before death during the year 1981 to 1987 are given in table B4 below.

Table B4 Percentage distribution of deaths according to type of medical attention received for the years 1981 to 1987

Year	Institu- tional	Qualified Medical practitioner	Unqualified Medical practitioner	None
1	2	3	4	5
1981	41	31	12	16
1982	44	31	10	15
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

It can be seen that the type of medical attention received before death during the year under report was almost the same as that of the previous year.

4.11 Comparison of mortality rates under Civil Registration System and Sample Registration System

Death rates and infant mortality rates compiled from the data collected under Civil Registration System and Sample Registration System for the years 1981 to 1987 are given in Table B5.

Table B5 Mortality rates under Civil Registration System and Sample Registration System for the years 1981 to 1987 of Kerala - rural

Year	Death rate		Infant mortality rate	
	Civil Registration	Sample Registration	Civil Registration	Sample Registration
1	2	3	4	5
1981	4.0	6.5	12.2	40.4
1982	3.7	5.9	10.9	30.3
1983	3.6	6.6	11.3	38.9
1984	3.6	6.4	9.1	30.1
1985	*3.7	6.6	NA	33.0
1986	*4.2	6.0	NA	28.6
1987	*3.6	6.1	NA	27.0

*Provisional.

It can be seen from the above table that the mortality rates estimated under civil registration system were always less than the rates arrived through sample registration system. This reveals that a good number of events have been left unregistered under civil registration system.

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

Life tables have been constructed separately for males and females and also for males and females together based on the age specific death rates for the years 1985, 1986 and 1987. The details are appended as tables 28, 29 and 30 of this report. The expectation of life at birth for males, females and males and females together were calculated as 67.1 73.1 and 70.1 respectively as against 66.9, 72.8 and 69.7 respectively during the previous year. The expectation of live for the last 7 years are given in table B6.

Table B6 Expectation of life based on age specific death rates for 1985, 1986 and 1987

Age specific death rates for the years	Males	Females	Males & Females together
1	2	3	4
1979, 1980 & 1981	64.7	69.0	66.8
1980, 1981 & 1982	66.4	70.7	68.5
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

Expectation of life of females was always seen higher than that of males. The difference between males and females during the year 1987 was 6.0 years as against 5.9 years during the previous year.

DIRECTOR.

METHOD ADOPTED FOR CALCULATION OF LIFE TABLE

$$m_x = \frac{\text{Total of Age specific death rates for the last 3 years}}{3 \times 1000}$$

$$q_0 = \frac{D_1}{B_1} + \frac{D_2}{B_2}$$

Where D_1 is the number of deaths of children born during the previous year and died during the current year and D_2 is that of the children born and died during the current year. B_1 and B_2 denote the total number of births occurred during the previous year and current year respectively.

$$q_x = \frac{2 \times c \times m_x}{2 + c \times m_x}$$

Where c is the class interval

let l_0 be 100000

$$l_x = l_0 - d_0$$

$$dx = l_x \times q_x$$

Let d_{70} is equal to l_{70}

$$L_0 = f \times l_0 + (1-f) l_1 \text{ where } f = \frac{D_1}{D_1 + D_2}$$

$$L_x = \frac{(l_x + l_{x+1}) \cdot c}{2}$$

$$L_{70} \text{ is equal to } \frac{d_{70}}{m_{70}}$$

Let L_{70} be T_{70}

$$T(70-1) = T_{70} + L_{(70-1)}$$

$$\text{Expectation of life } E_x = \frac{T_x}{l_x}$$

Appendix
List of tables - 1987

Table 1. Mid-year estimated population, births, deaths and vital rates.

2. Sample population and estimated population for mid-year and at the beginning of the next year.
3. Mid-year sample population and estimated population according to age and sex.
4. Sex ratio and percentage distribution of population by age group (1971, 1986 & 1987)
5. Region-wise sample population and estimated population.
6. Live births observed in samples and estimated according to sex.
7. Estimated number of women, married women and live births in the reproductive age groups.
8. Age specific fertility rate, age specific marital fertility rate, G.F.R., T.F.R and G.R.R.
9. Live births observed in samples classified by month of occurrence.
10. Live births observed in samples by type of medical attention at delivery.
11. Percentage distribution of births by age of mother and order of birth of child.
12. Distribution of samples according to birth rate of each sample.
13. Still births observed in samples and estimated according to sex and still birth rates.
14. Religion wise birth and death rates.
15. Deaths observed in samples and estimated according to sex.
16. Deaths observed in samples according to age and sex.
17. Age specific death rates based on estimated values.
18. Deaths observed in samples classified by month of occurrence.
19. Deaths observed in samples classified by medical attention received
20. Distribution of samples according to death rate of each sample.
21. Infant deaths observed and estimated according to sex and infant mortality rates.
22. Infant deaths observed in samples of children born during the current year and previous year.
23. Estimated number of infant deaths of children born during the current year and previous year.
24. Estimated number of perinatal, neo-natal and infant deaths according to sex.
25. Births and deaths detected through overlapping survey and intensive enquiry classified according to place and type of birth and death.
26. Distribution of births & deaths recorded by enumerator, supervisor, detected through overlapping survey & intensive enquiry.
27. Distribution of rates of marriage per 1000 population & percentage distribution of marriages according to age & sex.
28. Life table of males based on age specific death rates for the years 1985, 1986 and 1987.
29. Life table of females based on age specific death rates for the years 1985, 1986 and 1987.
30. Life table of males and females together based on age specific death rates for the years 1985, 1986 and 1987.
31. Number of units and population in the universe and in samples.

Table 1 Mid-year estimated population - births - deaths and vital rates - 1987

	Estimated population, births and deaths				Vital rates			
	Population	Deaths	Still births	Infant deaths	Birth rate	Death rate	Still birth rate	Infant death rate
	2	4	5	6	7	8	9	10
I								
A	35527	151	-	50	22.69	4.25	-	62.04
B	172140	1448	111	-	23.30	8.41	26.93	-
C	873222	6403	291	388	24.89	7.33	13.21	17.86
D	8276457	48825	3403	6039	24.66	5.90	16.40	29.60
Northern Region	9357346	56827	3805	6477	24.64	6.07	16.23	28.09
II								
A	95780	122	-	-	20.33	1.27	-	-
B	332540	2040	-	340	19.43	6.13	-	52.64
C	1407689	6931	91	548	19.70	4.92	3.27	19.77
D	11084458	69737	1482	5579	19.16	6.29	6.93	26.28
Southern region	12920467	78830	1573	6467	19.23	6.10	6.29	26.03
STATE	22277813	135657	5378	12944	21.51	6.09	11.10	27.02

Table 2 Sample population and estimated population for each stratum

Stratum	Observed population in samples in each stratum		Estimated population for each stratum		
	1-7-1987 2	1-1-1988 3	1-7-1987 4	1-1-1988 5	
I					
A	705	707	35527	35627	
B	1545	1563	172140	174145	
C	9001	9165	873222	889133	
D	97300	98325	8276457	8363645	
Northern Region	108551	109760	9357346	9462550	
II.					
A	787	785	95780	95537	
B	1956	1973	332540	335431	
C	15435	15502	1407689	1413799	
D	127157	127661	11084458	11128392	
Southern Region	145335	145921	12920467	12973159	
STATE	253886	255681	22277813	22435709	

Table 3 Mid-year population and estimated population according to age and sex

Age	Observed population			Estimated population		
	Male 2	Female 3	Total 4	Male 5	Female 6	Total 7
0 - 1	2854	2662	5516	249432	233346	482778
1 - 4	10970	10582	21552	960676	926163	1886839
5 - 9	13608	13217	26825	1191159	1157717	2348876
10 - 14	14084	13611	27695	1233873	1193188	2427061
15 - 19	14361	14867	29228	1260489	1304548	2565037
20 - 24	12600	14891	27491	1107745	1304305	2412050
25 - 29	10588	12004	22592	929742	1053938	1983680
30 - 34	8644	9455	18099	757694	828446	1586140
35 - 39	7146	7573	14719	627884	665066	1292950
40 - 44	5779	6303	12082	506617	553508	1060125
45 - 49	5084	5434	10518	446625	477938	924563
50 - 54	4795	5323	10118	421858	467861	889719
55 - 59	3824	4151	7975	336505	364838	701343
60 - 64	3256	3562	6818	286222	313858	600080
65 - 69	2535	2861	5396	222884	252735	475619
70 +	3145	4117	7262	278430	362523	640953
Total	123273	130613	253886	10817835	11459978	22277813

Table 4 Sex ratio and percentage distribution of population by age group
(years 1971, 1986 and 1987)

Age group	1971		1986		1987	
	Sex ratio 2	Percentage population 3	Sex ratio 4	Percentage population 5	Sex ratio 6	Percentage population 7
0 - 4	980	13.5	971	10.5	958	10.6
5 - 9	974	13.6	979	10.8	972	10.5
10 - 14	983	13.5	963	11.1	967	10.9
(0 - 14)	(976)	(40.6)	(971)	(32.4)	(966)	(32.0)
15 - 19	1078	10.9	1051	11.7	1035	11.5
20 - 24	1046	9.2	1196	10.7	1177	10.8
25 - 29	1103	6.4	1145	9.0	1134	8.9
30 - 34	1080	5.6	1097	7.0	1093	7.1
35 - 39	1080	6.0	1090	5.8	1059	5.8
40 - 44	1005	4.6	1081	4.6	1093	4.8
45 - 49	941	4.5	1075	4.2	1070	4.2
50 - 54	969	3.2	1112	3.9	1109	4.0
55 - 59	982	2.7	1056	3.1	1084	3.2
60 - 64	1044	2.3	1131	2.7	1097	2.7
65 - 69	1086	1.6	1098	2.1	1134	2.1
70 & above	1116	2.4	1238	2.8	1302	2.9
All	1020	100.0	1065	100.0	1059	100.0

Table 5 Religion-wise sample population and estimated population for each stratum

Stratum	Observed population			Estimated population			Total	
	Hindu	Muslim	Christian	Hindu	Muslim	Christian		
1	2	3	4	5	6	7	8	9
I.								
A	387	138	180	705	19502	6954	9071	35527
B	1099	441	5	1545	122448	49135	557	172140
C	4631	3930	440	9001	449271	381265	42686	873222
D	55929	33206	8165	97300	4757390	2824543	694524	8276457
Northern Region	62046	33715	8790	108551	5348611	3261897	746838	9357346
II.								
A	96	8	683	787	11683	974	83123	95780
B	1089	-	867	1956	185141	-	147399	332540
C	7738	1244	6453	15435	705714	113454	588521	1407689
D	74901	15689	36567	127157	6529227	1367633	3187598	11084458
Southern Region	83824	16941	44570	145335	7431765	1482061	4006641	12920467
STATE	145870	54656	53360	253886	12780376	4743958	4753479	22277813

Table 6 - Stratum-wise live births observed in samples and estimated according to sex

Stratum	Observed in samples			Estimated		
	Male 2	Female 3	Total 4	Male 5	Female 6	Total 7
I						
A	6	10	16	302	504	806
B	21	15	36	2340	1671	4011
C	99	125	224	9604	12127	21731
D	1226	1173	2399	104285	99777	204062
Northern region	1352	1323	2675	116531	114079	230610
II						
A	6	10	16	730	1217	1947
B	12	26	38	2040	4420	6460
C	160	144	304	14592	13133	27725
D	1269	1167	2436	110621	101729	212350
Southern region	1447	1347	2794	127983	120499	248482
State	2799	2670	5469	244514	234578	479092

Table 7 - Estimated number of total women, married women and live births in different reproductive age groups

Region	Age group of women									Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49			
1	2	3	4	5	6	7	8	9		
A. Estimated No. of total women										
I. Northern region	546113	523277	421696	329982	271623	235320	189134	2517145		
II. Southern region	758435	781028	632242	498464	393443	318188	288804	3670604		
State	1304548	1304305	1053938	828446	665066	553508	477938	6187749		
B. Estimated No. of married women										
I. Northern region	100780	332322	347130	285968	230141	189204	138257	1623802		
II. Southern region	46294	350030	500013	434571	342914	267730	225832	2167384		
State	147074	682352	847143	720539	573055	456934	364089	3791186		
C. Estimated no. of live births										
I. Northern region	30779	101985	59496	23847	10965	2734	804	230610		
II. Southern region	10065	121866	88013	21832	5273	1255	178	248482		
State (all births)	40844	223857	147509	45679	16238	3989	982	479092		
State (female births)	20873	108605	73213	22113	7649	1843	282	234578		

Table 8 - Age specific fertility rate, age specific marital fertility rate, G.F.R., T.F.R. and G.R.R.

Region	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	56.36	194.89	141.09	72.27	40.37	11.62	4.25	
II. Southern region	43.27	156.03	139.21	43.80	13.40	3.94	0.62	
State (all births)	31.31	171.62	139.96	55.14	24.42	7.21	2.05	
State (female births)	16.00	83.27	69.47	26.69	11.50	3.33	0.59	
B. Age specific marital fertility rate								
I. Northern region	305.41	306.88	171.39	83.39	47.64	14.45	5.82	
II. Southern region	217.41	348.16	176.02	50.24	15.38	4.69	0.79	
State (all births)	277.71	328.06	174.13	63.40	28.34	8.73	2.70	
			<u>I. Northern region</u>	<u>II. Southern region</u>		<u>State</u>		
G.F.R.		91.62		67.70		77.43		
T.F.R.		2.6		1.9		2.2		
G.R.R.		-		-		1.1		

Table 9 - Live births observed in samples classified by month of occurrence

Stratum	Number of live births reported from samples													
	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
I. A	-	-	2	2	1	3	-	2	1	3	-	2	16	
B	1	2	4	4	3	5	2	3	5	-	4	3	36	
C	19	11	24	20	22	12	26	20	15	15	21	19	224	
D	194	193	217	217	234	226	196	187	179	194	187	175	2399	
Northern region	214	206	247	243	260	246	224	212	200	212	212	199	2675	
II. A	1	1	4	1	2	1	1	1	-	-	3	1	16	
B	1	5	2	2	5	4	7	-	1	5	4	2	38	
C	23	17	31	15	35	18	33	23	23	33	26	27	304	
D	207	185	211	201	201	190	192	210	171	242	220	206	2436	
Southern region	232	208	248	219	243	213	233	234	195	280	253	236	2794	
State	446	414	495	462	503	459	457	446	395	492	465	435	5469	

Table 10 - Live births observed in samples by type of medical attention at delivery

Stratum	Type of medical attention					Not stated	Total
	Institutional	Trained professional	Untrained professional	Non professional			
1	2	3	4	5	6	7	
I. A	14	1	1	-	-	16	
B	20	12	4	-	-	36	
C	173	35	16	-	-	224	
D	1660	286	442	11	-	2399	
Northern region	1867	334	463	11	-	2675	
II. A	16	-	-	-	-	16	
B	37	1	-	-	-	38	
C	300	3	1	-	-	304	
D	2293	84	40	19	-	2436	
Southern region	2646	88	41	19	-	2794	
State	4513	422	504	30	-	5469	

Table 11 - Percentage distribution of births by age of mother and order of birth of child

Age group	Order of birth												
	1	2	3	4	5	6	7	8	9	10	11	Total	
15-19	90.5	9.1	0.4	-	-	-	-	-	-	-	-	-	100.0
20-24	55.1	34.9	8.6	1.1	0.2	0.0	0.1	-	-	-	-	-	100.0
25-29	26.2	38.8	21.7	9.1	2.9	0.9	0.2	0.2	-	-	-	-	100.0
30-34	10.2	26.8	26.4	11.4	11.4	7.7	3.1	1.7	1.3	-	-	-	100.0
35-39	9.1	12.8	19.8	14.4	13.4	10.2	10.7	4.8	3.7	1.1	-	-	100.0
40-44	-	2.2	4.3	15.2	10.9	19.6	6.5	10.9	17.4	13.0	-	-	100.0
45-49	9.1	-	-	9.1	-	-	36.4	27.2	9.1	9.1	-	-	100.0
All ages	42.8	32.0	13.9	5.1	2.6	1.6	0.9	0.5	0.4	0.2	-	-	100.0

Table 12 - Distribution of samples according to birth rate of each sample

Birth rate	Northern region		Southern region		State					
	No.	%	No.	%	1987		1986		1985	
					No.	%	No.	%	No.	%
1	2	3	4	5	6	7	8	9	10	11
Less than 16	5	8.2	21	23.6	26	17.4	24	16.0	15	10.0
16 & less than 20	13	21.3	33	37.1	46	30.7	36	24.0	38	25.3
20 & less than 24	16	26.2	25	28.1	41	27.4	36	24.0	39	26.0
24 & less than 28	11	18.1	6	6.8	17	11.3	24	16.0	31	20.7
28 & less than 32	6	9.8	2	2.2	8	5.3	15	10.0	10	6.7
32 & less than 36	6	9.8	2	2.2	8	5.3	6	4.0	6	4.0
36 & less than 40	2	3.3	-	-	2	1.3	7	4.6	8	5.3
40 & less than 44	2	3.3	-	-	2	1.3	1	0.7	1	0.7
44 & above	-	-	-	-	-	-	1	0.7	2	1.3
Total	61	100.0	89	100.0	150	100.0	150	100.0	150	100.0

Table 13 - 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 & still births	Still birth rate		
	Male	Female	Male	Female				
1	2	3	4	5	6	7	8	9
I. A	-	-	-	-	-	-	806	-
B	1	-	1	111	-	111	4122	26.93
C	-	3	3	291	-	291	22022	13.21
D	26	14	40	2212	1191	3403	207465	16.40
Northern region	27	17	44	2614	1191	3805	234415	16.23
II. A	-	-	-	-	-	-	1947	-
B	-	-	-	-	-	-	6460	-
C	1	-	1	91	-	91	27816	3.27
D	8	9	17	697	785	1482	213832	6.93
Southern region	9	9	18	788	785	1573	250055	6.29
State	36	26	62	3402	1976	5378	484470	11.10

Table 14 - Religion-wise birth and death rates

Religion	Birth rate		Death rate	
	Northern 2	Southern 3	Northern 5	Southern 6
1		State 4		State 7
Hindu	20.42	19.06	7.12	6.19
Muslim	33.06	22.06	4.98	4.66
Christian	18.16	18.50	3.37	6.46
Total	24.64	19.23	6.07	6.10

Table 15 - Stratum-wise deaths observed in samples and estimated according to sex

Stratum	Deaths observed in samples			Estimated number of deaths		
	Male 2	Female 3	Total 4	Male 5	Female 6	Total 7
I						
A	1	2	3	50	101	151
B	7	6	13	780	669	1449
C	36	30	66	3493	2910	6403
D	320	254	574	27220	21606	48826
Northern region	364	292	656	31543	25286	56829
II						
A	1	-	1	122	-	122
B	4	8	12	680	1360	2040
C	42	34	76	3830	3101	6931
D	454	346	800	39576	30161	69737
Southern region	501	388	889	44208	34622	78830
State	855	690	1545	75751	59908	135659

Table 16 - Distribution of deaths observed in samples according to age and sex

Age group	Northern region		Southern region		State					
	Male	Female	Male	Female	Male	Female				
	2	3	4	5	6	7	8	9	10	
1										
Below 1	40	36	76	38	34	72	78	70	148	
1-4	20	16	36	13	6	19	33	22	55	
5-9	7	8	15	8	4	12	15	12	27	
10-14	3	4	7	4	3	7	7	7	14	
15-19	6	5	11	9	3	12	15	8	23	
20-24	7	6	13	5	13	18	12	19	31	
25-29	6	8	14	10	7	17	16	15	31	
30-34	12	4	16	20	8	28	32	12	44	
35-39	13	6	19	11	3	14	24	9	33	
40-44	13	2	15	12	8	20	25	10	35	
45-49	25	4	29	25	12	37	50	16	66	
50-54	23	5	28	27	13	40	50	18	68	
55-59	25	15	40	26	20	46	51	35	86	
60-64	24	16	40	35	21	56	59	37	96	
65-69	41	37	78	58	31	89	99	68	167	
70 & above	99	120	219	200	202	402	299	322	621	
All	364	292	656	501	388	889	865	680	1545	

Table 17 - Age specific death rates based on estimated values

Age group	Northern region		Southern region		State	
	2	3	4	5	6	6
Less than 1	28.05	25.68	26.82	26.97	26.65	26.65
1-4	3.37	1.73	2.54	3.01	2.04	2.04
5-9	1.15	0.85	0.99	1.09	0.90	0.90
10-14	0.53	0.46	0.49	0.49	0.50	0.50
15-19	0.89	0.70	0.78	1.04	0.54	0.54
20-24	1.17	1.09	1.12	0.93	1.28	1.28
25-29	1.47	1.24	1.33	1.45	1.23	1.23
30-34	2.26	2.53	2.42	3.65	1.29	1.29
35-39	3.18	1.58	2.23	3.36	1.16	1.16
40-44	3.01	2.80	2.89	4.33	1.57	1.57
45-49	6.98	5.92	6.33	9.79	3.11	3.11
50-54	7.14	6.61	6.81	10.60	3.39	3.39
55-59	13.55	9.22	10.79	13.18	8.59	8.59
60-64	16.04	12.77	13.94	18.00	10.25	10.25
65-69	39.64	25.83	30.78	39.09	23.45	23.45
70 & above	92.33	82.16	85.44	94.57	78.42	78.42
All ages	6.07	6.10	6.09	7.00	5.23	5.23

Table 18 - Deaths observed in samples classified by month of occurrence

Stratum	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total
	2	3	4	5	6	7	8	9	10	11	12	13	14
I													
A	-	-	-	1	-	-	-	1	1	-	-	-	3
B	2	1	3	2	1	1	3	-	-	-	-	-	13
C	8	3	6	1	6	5	7	3	2	10	5	10	66
D	54	34	51	49	50	44	60	46	46	51	39	50	574
Northern region	64	38	60	53	57	50	70	50	49	61	44	60	656
II													
A	-	-	-	-	-	-	-	-	-	-	-	1	1
B	1	-	-	5	-	1	2	2	-	1	-	-	12
C	4	9	3	4	9	5	5	11	4	8	7	7	76
D	84	66	70	58	54	65	64	64	64	71	69	71	800
Southern region	89	75	73	67	63	71	71	77	68	80	76	79	889
State	153	113	133	120	120	121	141	127	117	141	120	139	1545

Table 19 - Deaths classified by type of medical attention

Stratum	Institutional		Qualified medi. practitioner		Unqualified medi. practitioner		No treatment		Total
	1	2	3	4	5	6			
I									
A	3	-	-	-	-	3			3
B	5	5	5	1	2	13			13
C	24	23	23	12	7	66			66
D	210	187	187	60	117	574			574
Northern region	242	215	215	73	126	656			656
II.									
A	1	-	-	-	-	1			1
B	5	3	3	-	4	12			12
C	42	24	24	2	8	76			76
D	441	182	182	36	141	800			800
Southern region	489	209	209	38	153	889			889
State	731	424	424	111	279	1545			1545

Table 20 - Distribution of samples according to death rate of each sample

Death rate	State													
	Northern region			Southern region			1987			1986			1985	
	No.	%		No.	%		No.	%		No.	%	No.	%	
1	2	3	3	4	5	5	6	7	7	8	9	10	11	
Less than 2	2	3.3	2.2	2	2.2	4	4	2.7	3	3	2.0	3	2.0	
2 & less than 3	3	4.9	4.5	4	4.5	7	7	4.7	12	12	8.9	6	4.0	
3 & less than 5	13	21.3	22.5	20	22.5	33	33	22.0	36	36	24.0	33	22.0	
5 & less than 7	21	34.4	40.5	36	40.5	57	57	38.0	50	50	33.3	53	35.3	
7 & less than 9	15	24.6	24.7	22	24.7	37	37	24.6	36	36	24.0	31	20.7	
9 & less than 11	5	8.2	3.4	3	3.4	8	8	5.3	10	10	6.7	14	9.3	
11 & less than 13	2	3.3	2.2	2	2.2	4	4	2.7	3	3	2.0	8	5.3	
13 & less than 15	-	-	-	-	-	-	-	-	-	-	-	1	0.7	
15 & above	-	-	-	-	-	-	-	-	-	-	-	1	0.7	
Total	61	100.0	100.0	89	100.0	150	150	100.0	150	150	100.0	150	100.0	

Table 21 - Infant deaths observed and estimated according to sex and infant mortality rates

Stratum	Infant deaths observed		Infant deaths estimated		Estimated live births		Infant mortality rate					
	Male	Female	Male	Female	Male	Female	Male	Female				
1	2	3	4	5	6	7	8	9	10	11	12	13
I. A	-	1	1	-	50	50	302	504	806	-	99.21	62.03
B	-	-	-	-	-	-	2340	1671	4011	-	-	-
C	-	4	4	-	388	388	9604	12127	21731	-	31.99	17.85
D	40	31	71	3402	2637	6039	104285	99777	204062	32.62	26.43	29.59
Northern region	40	36	76	3402	3075	6477	116531	114079	230610	29.19	26.96	28.09
II. A	-	-	-	-	-	-	730	1217	1947	-	-	-
B	-	2	2	-	340	340	2040	4420	6460	-	76.92	52.63
C	3	3	6	274	274	548	14592	13133	27725	18.78	20.92	19.77
D	35	29	64	3051	2528	5579	110621	101729	212350	27.58	24.85	26.27
Southern region	38	34	72	3325	3142	6467	127983	120499	248482	25.98	26.07	26.03
State	78	70	148	6727	6217	12944	244514	234578	479092	27.51	26.50	27.02

Table 22 - Infant deaths observed in samples of children born during the current year and previous year

Stratum	Born in 1986						Born in 1987											
	less than 7 days		less than 28 days		less than one year		less than 7 days		less than 28 days		less than one year							
	M	F	M	F	M	F	M	F	M	F	M	F	T					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I. A	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	1	1	-	2	2	-	3	3	-	3	3
D	2	1	3	2	1	3	7	5	12	23	20	43	28	24	52	33	26	59
Total	2	1	3	2	1	3	7	6	13	23	23	46	28	28	56	33	30	63
II. A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	2	2
C	-	-	-	-	-	-	-	1	1	3	2	5	3	2	5	3	2	5
D	1	-	1	1	-	1	3	2	5	21	18	39	29	23	52	32	27	59
Total	1	-	1	1	-	1	3	3	6	24	21	45	32	26	58	35	31	66
State	3	1	4	3	1	4	10	9	19	47	44	91	60	54	114	68	61	129

Table 23 - Estimated number of infant deaths of children born during the current year and previous year

Stratum	Born in 1986						Born in 1987											
	less than 7 days		less than 28 days		less than 1 year		less than 7 days		less than 28 days		less than 1 year							
	M	F	M	F	M	F	M	F	M	F	M	F						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
I. A	-	-	-	-	-	-	-	-	-	-	50	50	-	50	50	-	50	50
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	-	-	-	-	-	97	97	-	194	194	-	291	291	-	291	291
D	170	85	255	170	85	255	595	425	1020	1956	1701	3657	2382	2041	4423	2807	2212	5019
Total	170	85	255	170	85	255	595	522	1117	1956	1945	3901	2382	2382	4764	2807	2553	5360
II. A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B	-	-	-	-	-	-	-	-	-	-	170	170	-	170	170	-	340	340
C	-	-	-	-	-	-	-	91	91	274	182	456	274	182	456	274	183	457
D	87	-	87	87	-	87	262	174	436	1831	1569	3400	2528	2005	4533	2789	2354	5143
Total	87	-	87	87	-	87	262	265	527	2105	1921	4026	2802	2357	5159	3063	2877	5940
State	257	85	342	257	85	342	857	787	1644	4061	3866	7927	5184	4739	9923	5870	5430	11300

Table 28 - Life table of males ~~and females~~ based on age specific death rates of the years 1985, 1986 and 1987

Age x to x+n	Age specific death rates			Mean age specific death rate (n m x)	Probability of a person aged x dying before age x+n(qx)	No. of deaths (dx)	No. surviv- ing to age 100000 born alive (lx)	Years of life-lived between x and x+n(Lx)	Years of life lived between x & above x (Tx)	Expect- ation of life in years (Ex)	Begining age (x)
	1985	1986	1987								
	2	3	4	5	6	7	8	9	10	11	12
Less than 1	36.67	28.01	26.97	0.03055	0.02730	2730	100000	97618	6707487	67.07	0
1 to 4	5.00	2.06	3.01	0.00336	0.01335	1299	97270	386482	6609869	67.95	1
5 to 9	1.11	1.44	1.09	0.00121	0.00603	579	95971	478408	6223387	64.85	5
10 to 14	0.49	0.29	0.49	0.00042	0.00210	200	95392	476460	5744979	60.22	10
15 to 19	0.93	0.83	1.04	0.00093	0.00464	442	95192	474855	5268519	55.35	15
20 to 24	1.88	1.45	0.93	0.00142	0.00707	670	94750	472075	4793664	50.59	20
25 to 29	2.10	1.51	1.45	0.00169	0.00841	791	94080	468423	4321589	45.94	25
30 to 34	3.29	2.23	3.65	0.00306	0.01518	1416	93289	462905	3853166	41.30	30
35 to 39	3.13	2.88	3.36	0.00312	0.01548	1422	91873	455810	3390261	36.90	35
40 to 44	6.67	5.75	4.33	0.00558	0.02752	2489	90451	446033	2934451	32.44	40
45 to 49	6.61	7.94	9.79	0.00811	0.03974	3496	87962	431070	2488418	28.29	45
50 to 54	10.69	10.72	10.60	0.01067	0.05196	4389	84466	411358	2057348	24.36	50
55 to 59	13.97	15.10	13.18	0.01408	0.06801	5446	80077	386770	1645990	20.56	55
60 to 64	26.07	22.57	18.00	0.02221	0.10521	7852	74631	353525	1259220	16.87	60
65 to 69	37.13	41.00	39.09	0.03907	0.17797	11885	66779	304183	905695	13.56	65
70 & above	93.51	85.70	94.57	0.09126	1.00000	54894	54894	601512	601512	10.96	70

Table 29 - Life table of females based on age specific death rates of the years 1985, 1986 and 1987

Age x to x+n	Age specific death rates			Mean age specific death rate (n m x)	Probability of a person aged x before age x+n(qx)	No. of deaths (dx)	No. surviving to age 100000 alive (lx)	Years of life lived between x and x+n(Lx)	Years of life lived between x & above x (Tx)	Expect- ation of life in years (Ex)	Begin- ning of age (x)
	1985	1986	1987								
1	2	3	4	5	6	7	8	9	10	11	12
Less than 1	32.51	28.49	26.65	0.02922	0.02650	2650	100000	97686	7312872	73.13	0
1 to 4	3.98	3.31	2.04	0.00311	0.01236	1203	97350	386994	7215186	74.12	1
5 to 9	0.94	0.84	0.90	0.00089	0.00444	427	96147	479662	6828192	71.02	5
10 to 14	0.56	0.67	0.50	0.00058	0.00290	278	95720	477905	6348524	66.32	10
15 to 19	0.40	0.46	0.54	0.00047	0.00235	224	95442	476650	5870619	61.51	15
20 to 24	0.98	0.89	1.28	0.00105	0.00524	499	95218	474843	5393969	56.65	20
25 to 29	1.03	1.40	1.23	0.00122	0.00608	576	94719	472155	4919126	51.93	25
30 to 34	1.47	0.98	1.29	0.00125	0.00623	587	94143	469248	4446971	47.24	30
35 to 39	1.12	2.80	1.16	0.00169	0.00841	787	93556	465813	3977723	42.52	35
40 to 44	1.36	1.68	1.57	0.00154	0.00767	712	92769	462065	3511910	37.86	40
45 to 49	2.71	2.56	3.11	0.00279	0.01385	1275	92057	457098	3049845	33.13	45
50 to 54	3.61	3.28	3.39	0.00343	0.01700	1543	90782	450053	2592747	28.56	50
55 to 59	5.77	7.65	8.59	0.00734	0.03604	3216	89239	438155	2142694	24.01	55
60 to 64	14.12	15.46	10.25	0.01328	0.06427	5529	86023	416293	1704539	19.81	60
65 to 69	22.57	30.36	23.45	0.02546	0.11968	9634	80494	378385	1288246	16.00	65
70 & above	86.16	69.05	78.42	0.07788	1.00000	70860	70860	909861	909861	12.84	70

Table 30 - Life table of males and females together based on age specific death rates of the years 1985, 1986 and 1987

Age x to x+n	Age specific death rates			Mean age specific death rate (n m x)	Probability of a person dying aged x before age x+n(qx)	No. of person deaths (dx)	No. surviv- ing to age x out of 100000 born alive (lx)	Years of life lived between x and x+n(Lx)	Years of life lived between x & above x (Tx)	Expect- ation of life in years (Ex)	Begining of age (x)
	1985	1986	1987								
1	2	3	4	5	6	7	8	9	10	11	12
Less than 1	34.62	28.25	26.82	0.02990	0.02691	2691	100000	97650	7004633	70.05	0
1 to 4	4.49	2.68	2.54	0.00324	0.01288	1253	97309	386730	6906983	70.98	1
5 to 9	1.03	1.14	0.99	0.00105	0.00524	503	96056	479023	6520253	67.88	5
10 to 14	0.53	0.47	0.49	0.00050	0.00250	238	95553	477170	6041230	63.22	10
15 to 19	0.66	0.64	0.78	0.00069	0.00344	328	95315	475755	5564060	58.38	15
20 to 24	1.39	1.14	1.12	0.00122	0.00608	578	94987	473490	5088305	53.57	20
25 to 29	1.52	1.45	1.33	0.00143	0.00712	672	94409	470365	4614815	48.88	25
30 to 34	2.35	1.58	2.42	0.00212	0.01054	988	93737	466215	4144450	44.21	30
35 to 39	2.07	2.84	2.23	0.00238	0.01183	1097	92749	461003	3678235	39.66	35
40 to 44	3.89	3.63	2.89	0.00347	0.01720	1576	91622	454320	3217232	35.10	40
45 to 49	4.58	5.15	6.33	0.00535	0.02640	2378	90076	444435	2762912	30.67	45
50 to 54	6.95	6.81	6.81	0.00686	0.03372	2957	87698	431098	2318477	26.44	50
55 to 59	9.77	11.28	10.79	0.01061	0.05168	4379	84741	412758	1887379	22.27	55
60 to 64	19.77	18.79	13.94	0.01750	0.08383	6737	80362	384968	1474621	18.35	60
65 to 69	29.44	35.43	30.78	0.03188	0.14763	10869	73625	340953	1089653	14.80	65
70 & above	89.52	76.49	85.44	0.08382	1.00000	62756	62756	748700	748700	11.93	70

Table 31 - Number of units and population in the universe and in samples

Stratum	Universe		Samples		Percentage of sample population	Raising factor for stratum estimates 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
Northern region	3703	12283018	89	138114	1.12	--
State	5777	20682405	150	235530	1.14	--

2/8

