



**GOVERNMENT OF KERALA**

**ANNUAL REPORT  
ON RESIDENTIAL  
VITAL RATES  
1988**

**DEPARTMENT OF  
ECONOMICS AND STATISTICS  
THIRUVANANTHAPURAM  
1993**



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RESIDENTIAL VITAL RATES  
IN  
CORPORATION & MUNICIPALITIES  
1988

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DEPARTMENT OF ECONOMICS & STATISTICS  
THIRUVANANTHAPURAM  
FEBRUARY, 1992



## P R E F A C E

This report presents the adjusted residential rates on births and deaths in the 30 municipalities, 3 city corporations and in the Guruvayoor Township for the year 1988. The rates are estimated on the basis of the results of spot check survey conducted in the selected units in the Corporations/Municipalities in Kerala. For the calculation, adjustments are made for under registration and events occurring to normal residents outside the town/city. This report has been prepared by the Vital Statistics Unit in the Directorate of Economics and Statistics.

Thiruvananthapuram,  
February 1992.

S. RETNABAI AMMAL,  
DIRECTOR.



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## RESIDENTIAL VITAL RATES IN CORPORATIONS AND MUNICIPALITIES - 1988

### Introduction:-

Under the Civil Registration System in Kerala, the vital events irrespective of whether it occurred to the normal residents or the outsiders are registered at the place of occurrence. The medical facilities available in the urban areas are comparatively good and they are utilised by the people in the rural areas also. This leads to the registration of high number of events pertaining to the outsiders. The level of under registration though reduced to a considerable extent, still persists in Kerala. The presence of under registration and registration of events to the outsiders stands in the way of understanding the reliable and accurate position on the rate of incidence of births and deaths to the normal residents. So with the intention of understanding the extent of under-registration and arriving at the adjusted residential rates the spot-check survey under the scheme, "strengthening of vital statistical units in Municipalities and corporations for the improvement of Vital Statistics" was introduced. The spot-check results for the year 1988 are presented in the report.

### II. Scheme for improvement of vital statistics

The reliable statistics relating to birth and death are very important in developing, planning, especially for taking appropriate action in the field of Health and Family Planning. To get such reliable data, every birth and death should have to be registered without any omission under the rules in vogue. For the purpose, the birth and death registration is made compulsory in the State.

To avoid omission in the registration of vital events, educational efforts are to be made to create awareness among the public on the necessity and importance of registration of vital events. The publication of pamphlets, leaflets, display of boards, exhibition of slides in the theatre etc. are a few among them. The defaulters are also to be suitably fined in accordance with the provisions contained in birth and death registration act and rules. Despite such measures taken, there are deficiencies in the Civil registration data. For the improvement of the vital statistics generated through this source, the spot-check scheme continued in the selected centres as in the previous year.

### Objective:-

The objectives of the spot-check scheme are

- i. to estimate the adjusted residential vital rates in the Municipalities and Corporations.
- ii. to ascertain the extent of under registration.

### Methodology

During the year 1988, three Corporation, 30 Municipalities and Guruvayoor Township were covered under the scheme. In the Corporations of Thiruvananthapuram, Kochi and Kozhikode, 15 wards each were selected for the conduct of the survey. Similarly in all the Municipalities, except in Kollam and Alappuzha, 15 wards each were selected. In Kollam and Alappuzha 18 wards each were selected. All the ten wards in Guruvayoor Township were selected, for the above purpose. The random sampling technique was adopted for the selection of wards. The Compiler and Research Assistant engaged in the work, visited each household in these selected wards and collected the required data on vital events. The vital events to normal residents enumerated through spot-check comprise the following:-

- i. Events occurring inside the town and registered.
- ii. Events occurring inside the town but not registered.
- iii. Events occurring outside the town registered and un-registered.

### Calculation of rate of under-registration

Spot-check results are used for the calculation of the extent of under-registration and estimation of residential vital rates. For the calculation of the percentage of under-registration, the events occurring to persons coming to the town/city to avail themselves of better medical facilities are included.

For the calculation of residential vital rates events occurred to outsiders should be excluded from the total registered events. The registered rates to normal residents are weighted for under registration and further adjusted for events occurring outside the town to normal residents.

### III. General finding of the survey

Table I represents the area, population and density of population for the selected Municipalities/Corporations taken for the spot-check survey during the year 1988. As in the previous year, the density of population was highest in Kollam Municipality (8061) followed by Thiruvananthapuram Corporation (7276). As compared to the previous year, the density of population increased slightly in these two centres. This was the general trend in all the Municipalities and corporations except in Thiruvalla. It may be due to the increase in area resulting from the merger of Kuttappuzha Panchayat with Thiruvalla Municipality. The density of population was lowest in Punalur Municipality (1358). The density of population was more than 5000 in all the three Corporations and the Municipalities of Kollam, Thrissur, Thalasserry and Kannur as in the previous year.

Table II shows the number of hospitals and other medical institutions with bed strength available both in the public and private sector. As in the previous year, Thiruvananthapuram Corporation stood first in the case of number of Hospitals in public sector, and Kochi Corporation in the case of hospitals in private sector, during the year under report. The bed population ratio in the three city Corporations estimated was comparatively low during the year under report, which shows that even the three cities in Kerala the medical facilities may not be sufficient in view of the increasing population.

Table III shows the number of burial grounds and cremation grounds both private and public in the Municipalities and Corporations and also the number of registration units in each Municipality and Corporation selected for spot-check during the year 1988. Number of burial grounds and cremation grounds are high in private sector. Highest number of registration unit was in Thiruvananthapuram Corporation (15) followed by Kozhikode Corporation (14).

Table IV represents number of registration units with area and population for registration unit. Among the three City Corporations, area was largest in Kochi Corporation (94.88 Sq.Km.). It was followed by Kozhikode (82.67 Sq.Km.) and Thiruvananthapuram (74.93 Sq.Km.). Area per registration units in these Corporations area 47.44 Sq.Km, 5.90 Sq.Km. and 4.99 Sq.Km. respectively. In the case of Municipalities area per registration unit was largest in Punalur (34.60) and smallest in Thrissur (2.10).

Table V represents the registered vital events such as total events and events to normal residents (Viz. live births, still births, infant deaths, maternal death and other death, with male and female breakup) in each Municipality and Corporation. It is seen that live birth to normal residents were maximum (14497) in Thiruvananthapuram Corporation and minimum in Irinjalakuda Municipality (64). Still births and infant deaths to normal residents were highest in Kozhikode Corporation (205 and 346). In the Municipalities such as Neyyattinkara, Changanacherry, Muvattupuzha, Aluva, Perumbavoor, Kodungallur, Guruvayoor Township, Kunnankulam, Tirur, Malappuram and Badagara from where no still births to normal residents were reported. Infant deaths to normal residents were also not reported from Punalur, Aluva, Guruvayoor Township and Kunnankulam. In the case of other deaths, events to normal residents were maximum in Kozhikode Corporation (2713) followed by Kochi (2504) and Thiruvananthapuram (1684). Maternal deaths to normal residents were seen reported only in Thiruvananthapuram Corporation (1), Kollam (3) and Irinjalakuda (1).

The data on death according to causes are given in table VI. Heart disease, Cancer and Pulmonary diseases were among the major causes of death in the City Corporations and Municipalities during the year under report.

Results of spot-check Survey during the year 1988 are given in table VII. It is seen that live births and deaths to normal residents enumerated and registered were maximum in Thiruvananthapuram Corporation.

Table VIII shows the details of under registration and occurrence of out side events. The percentage of under registration in respect of birth and death was highest in Neyyattinkara Municipality (40.76) and 36.67 respectively. During the previous year these rates were 27.14 and 18.60 respectively in this Municipality. As in the previous year the percentage of under-registration in respect of birth and death was 'nil' in Chanaganacherry and Tirur during the year under report also. In Thiruvananthapuram Corporation and in the Municipalities Mavelikara, Pala, Perumbavoor, Irinjalakuda, Kondungallur and Chalakudy there was no case of under-registration in respect of birth during the year under report. The percentage of outside registration of birth was highest in Irinjalakuda Municipality (86.62%) and that of death was in Palai Municipality (32.4%).

#### IV. Adjusted residential vital rates and registered vital rates 1988

For estimation of adjusted residential vital rates, the event occurring to outsiders are excluded from the total registered events. The adjusted residential vital rates and registered vital rates are given in table IX. The registered birth rate was highest in Thalasserry (40.28) and the same was lowest in Irinjalakuda Municipality (2.40) during the year 1988; while registered death rate was highest in Alappuzha (7.82) and lowest in Palai (2.07).

The adjusted residential birth rate was Maximum in Thalasserry Municipality (49.40) and minimum in Tirur (11.06) during the year under report. The adjusted residential death rate was highest in Kannur (9.47) Municipality and lowest in Malappuram (3.05). On the basis of the above results, the average of the residential birth and death rates in respect of various Corporations and Municipalities in Kerala for the year 1988 was estimated as 23.7 and 5.8 respectively. The method of estimation of residential vital rates is shown in the Appendix.

In Table IX the residential birth and death rates for the last six years from 1983 are compared. There was a fluctuating trend in almost all the Municipalities and Corporations in respect of adjusted residential birth rate except in Cherthala where this rate was decreasing gradually. By taking 1983 as base year, it is seen that in the following Municipalities, adjusted residential birth rate decreased considerably during the year under report. They are Kayamkulam, Alappuzha, Changanacherry, Palai, Muvattupuzha, Parur, Irinjalakuda, Guruvayoor, Kunnankulam, Tirur, Malappuram, Kozhikode, Badagara, Kannur and Kasaragode. In respect of adjusted death rate also the tendency was more or less the same in almost all the Municipalities as in the case of adjusted residential birth rate.

## V. Conclusion

The survey has been implemented successfully in the year 1988 also. The survey result reveals that cent percent average in Civil Registration has not achieved during the year under report due to under registration of vital events.

The spot-check in Municipalities and Corporations helps to find out the unregistered events and thereby the concerned authorities can make efforts to minimise the extent of under-registration.

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**APPENDIX**  
**Method of Calculation of Adjusted Residential**  
**Vital Rates**

Residential vital rates can broadly be defined as the rate of occurrence of vital events to the normal residents of an area in a year. The vital events occurring to normal residents enumerated during the spot-check are divided into three categories.

- i. Events occurring inside the town registers
- ii. events occurring inside the town but not registered
- iii. events occurring outside the town registered or un-registered.

For calculation of the percentage of under-registration, the events occurring to persons coming to the town/city to avail themselves the better medical facilities are included and those of normal residents who are going outside the town are to be included.

- I. Percentage of under registration:  $\frac{\text{No. of events occurred to normal residents inside the town but not, registered} \times 100}{\text{No. of events occurred to normal residents inside the town registered and not registered}}$
- II. Percentage of events occurred outside the town to normal residents :  $\frac{\text{No. of events occurred to normal residents outside the town registered and un-registered} \times 100}{\text{Total No. of events enumerated and occurred to normal residents inside the town}}$
- III. Registered Birth/Death rate to N.R. :  $\frac{\text{Total number of Birth/Death occurred to NR} \times 100}{\text{Mid-year population of the town}}$
- IV. Residential birth/death rate to NR occurred inside the town (Weighted for under Registration) :  $\frac{\text{Registered Birth/Death rate} \times 100}{100\% \text{ of Under Registration}}$
- V. Final residential Birth/Death rate (weighted for outside evnts), :  $\frac{\text{Residential Birth/Death rate to NR occurred inside the town (weighted for under registration)} \times 100}{100 \text{ percentage of events occurred outside the town to N.R.}}$

**N.R.:** Normal Residents.

Table I - Area and Population - 1988

Municipality/Corporation	Area in Sq.Km. as per 1981 Census	Mid-year popula- tion	Density of po- pulation per Sq.Km.
1	2	3	4
Neyyattinkara	9.70	31354	3232
Thiruvananthapuram Corporation	74.93	545218	7276
Attingal	14.18	31703	2236
Kollam	18.48	148972	8061
Punalur	34.60	46984	1358
Kayamkulam	21.79	67232	3085
Mavelikara	12.65	27316	2159
Alappuzha	46.77	177485	3795
Cherthala	16.19	43474	2685
Thiruvalla	27.87	54855	1968
Changanacherry	13.50	54607	4045
Kottayam	15.55	63125	4381
Palai	15.93	22672	1423
Vaikom	8.73	21928	2512
Muvattupuzha	13.18	27928	2119
Kochi Corporation	94.88	575517	6066
Aluva	7.18	26204	3650
Parur	9.03	27770	3075
Perumbavoor	13.59	24803	1825
Irinjalakuda	11.24	26614	2368
Kodungalloor	17.30	30457	1761
Chalakyudy	25.23	45385	1799
Thrissur	12.65	79180	6259
Guruvayoor	6.49	19481	3002
Kunnamkulam	6.96	20266	2912
Palakkad	26.60	124146	4667
Chittoor-Thathamangalam	14.71	31878	2167
Tirur	16.59	48464	2921
Malappuram	33.60	46675	1389
Kozhikode Corporation	82.67	445655	5391
Vadakara	21.34	72897	3416
Thalasserry	15.35	80974	5275
Kannur	11.03	65491	5938
Kasaragode	16.68	50302	3016

Table II - Number of hospitals and other institutions - 1988

Sl. No.	Municipality/ Corporation	Hospitals							Dispensaries and other Institutions							Maternity and child Health Centre					
		Public			Private			Total Beds	Public			Private			Total	Public			Private		Total
		No.	Beds	No.	Beds	No.	Beds		No.	Beds	No.	Beds	No.	Beds		No.	Beds	No.	Beds	No.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1.	Neyyattinkara	3	305	2	26	5	331	-	-	9	-	9	-	2	-	-	-	2	-		
2.	Thiruvananthapuram	24	6566	42	1615	66	8181	11	10	30	-	41	10	36	-	-	-	36	-		
3.	Attungal	-	-	7	285	7	285	2	45	15	-	17	45	3	-	-	-	3	-		
4.	Kollam	6	950	20	1106	26	2056	5	-	69	-	74	-	15	-	-	-	15	-		
5.	Punalur	1	133	8	189	9	322	2	-	6	-	8	-	3	-	-	-	3	-		
6.	Kayamkulam	3	170	15	285	18	455	-	-	6	-	6	-	6	-	-	-	6	-		
7.	Mavelikara	2	220	2	140	4	360	-	-	6	60	6	60	-	-	-	-	-	-		
8.	Alappuzha	6	1527	6	92	12	1619	3	-	124	-	127	-	6	-	-	-	6	-		
9.	Cherthala	3	167	4	431	7	598	2	-	13	-	15	-	3	-	-	-	3	-		
10.	Thiruvalla	2	200	7	470	9	670	-	-	10	-	10	-	-	-	-	-	-	-		
11.	Changanacherry	2	174	14	175	16	349	-	-	28	-	28	-	4	-	-	-	4	-		
12.	Kottayam	3	390	15	200	18	590	3	-	54	198	57	198	3	-	-	-	3	-		
13.	Palai	3	240	9	366	12	606	-	-	18	-	18	-	4	-	-	-	4	-		
14.	Vaikom	2	260	2	50	4	310	-	-	34	-	34	-	1	-	-	-	1	-		
15.	Muvattupuzha	3	180	10	361	13	541	1	-	29	-	30	-	2	-	-	-	2	-		
16.	Kochi Corporation	14	1962	57	2062	71	4024	6	-	74	-	80	-	8	-	-	-	8	-		
17.	Aluva	2	237	13	560	15	797	1	-	27	-	28	-	2	-	-	-	2	-		

(Contd.)



Table II (Contd.)

Sl. No.	Municipality/ Corporation	Hospitals						Dispensaries and other Institutions						Maternity and child Health Centre					
		Public		Private		Total	Public		Private		Total	Public		Private		Total			
		No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18.	Parur	2	169	5	145	7	314	-	-	15	-	15	-	2	-	-	-	2	-
20.	Irinjalakuda	2	236	4	59	6	295	1	-	-	-	1	-	2	-	-	-	2	-
21.	Kodungalloor	2	200	4	180	6	380	-	-	11	-	11	-	-	-	-	-	-	-
22.	Chalakyady	1	144	8	191	9	335	2	-	34	-	26	-	3	-	-	-	3	-
23.	Thrissur	5	1370	14	870	19	2240	1	-	13	-	14	-	-	4	-	-	4	-
24.	Guruvayoor	1	30	6	188	7	218	-	-	-	-	-	-	1	-	-	-	1	-
25.	Kunnamkulam	1	104	6	193	7	297	2	-	-	2	-	-	1	-	-	-	1	-
26.	Palakkad	4	508	15	169	19	677	2	-	11	-	13	-	3	-	-	-	3	-
27.	Chittoor-Thatha- mangalam	2	118	1	23	3	141	-	-	6	11	6	11	1	-	-	-	1	-
28.	Tirur	4	145	3	215	7	360	2	-	6	-	8	-	3	-	-	-	3	-
29.	Malappuram	4	156	2	100	6	256	1	-	15	-	16	-	2	-	-	-	2	-
30.	Kozhikode Corporation	9	3805	29	919	38	4724	12	-	88	-	100	-	7	-	-	-	7	-
31.	Vadakara	2	240	11	324	13	564	1	-	97	-	98	-	3	-	-	-	3	-
32.	Thalasseri	2	555	16	240	18	795	2	-	44	-	46	-	-	-	-	-	-	-
33.	Kannur	2	55	20	422	22	477	2	-	16	42	18	42	1	9	-	-	1	9
34.	Kasaragode	2	210	9	750	11	960	1	-	21	-	22	-	-	-	-	-	-	-

Table III: Number of burial grounds, cremation grounds, wards and civil registration units

Municipality/ Corporation	Burial grounds		Cremation grounds		V.S.Registration Units				
	Municipal/Corporation	Private	Municipal/Corporation	Private	No.of units	No.of registration			
	1	2	3	4	5	6	7	8	9
Neyyattinkara	1	4	5	3	3	20	1		
Thiruvananthapuram Corporation	-	24	24	2	2	50	2	15	
Attingal	1	1	2	1	5	20	1		
Kollam	2	15	17	1	-	36	3		
Punalur	1	7	8	1	-	28	1		
Kayamkulam	1	14	15	3	3	32	1		
Mavelikara	1	9	10	1	1	20	1		
Alappuzha	3	21	24	1	-	36	2		
Cherthala	1	5	6	1	1	28	1		
Thiruvalla	1	1	2	1	-	32	1		
Changanacherry	1	12	13	1	1	28	1		
Kottayam	1	15	16	1	1	32	2		
Palai	1	5	6	1	-	20	1		
Vaikom	1	2	3	1	-	20	1		
Muvattupuzha	1	8	9	1	-	20	1		
Cochin Corporation	8	40	48	5	16	50	2		
Alwaye	-	7	7	3	3	20	1		
Parur	1	7	8	1	7	20	1		
Perumbavoor	-	8	8	1	1	20	1		
Irinjalakuda	1	5	6	1	1	20	1		
Kodungallur	-	2	2	-	-	20	1		
Chalakyady	2	7	9	1	1	28	1		
Thrissur	3	11	14	2	3	32	6		
Guruvayoor	1	4	5	1	1	10	1		
Kunnamkulam	-	2	2	-	-	16	1		

(Contd.)

(Table III contd.)

1	2	3	4	5	6	7	8	9
Palakkad	4	7	11	3	1	4	32	1
Chittoor-Thathamangalam	-	1	1	3	-	3	20	2
Tirur	1	-	1	-	1	1	24	1
Malappuram	1	10	11	-	1	1	24	1
Calicut Corporation	2	9	11	4	2	6	39	14
Vadakara	1	8	9	-	-	-	32	1
Thalasseri	1	15	16	1	11	12	32	1
Kannur	1	12	13	1	-	1	32	4
Kasaragod	-	9	9	2	1	3	28	2

Table IIIA Under registration and occurrences of outside events

Municipality/ Corporation	Percentage of under registration			Percentage of outside events		
	Births	Deaths	3	Births	Deaths	5
1	2	3		4	5	
Neyyattinkara	40.76	36.67		57.80	18.92	
Thiruvananthapuram Corporation	-	4.36		3.27	1.12	
Attingal	2.67	5.48		78.07	29.81	
Kollam	0.22	3.06		17.15	5.77	
Punalur	2.73	9.96		31.97	6.82	
Kayamkulam	1.00	18.18		44.60	18.52	
Mavelikkara	-	2.70		34.55	15.27	
Alappuzha	0.53	8.82		17.54	3.41	
Cherthala	1.55	22.22		43.42	17.35	
Thiruvalla	0.52	3.77		33.45	3.64	
Changanacherry	-	-		38.07	32.18	

(Contd.)

Table III contd.)

1	2	3	4	5
Kottayam	0.56	3.16	51.35	30.15
Palai	-	4.00	33.80	32.43
Vaikom	2.00	4.08	65.99	15.52
Muvattupuzha	15.54	16.67	43.90	20.00
Cochin Corporation	8.52	20.39	24.07	3.92
Aluvā	3.13	16.67	56.16	18.64
Parur	0.65	15.46	52.17	14.91
Perumbavoor	-	3.28	49.35	16.44
Irinjalakuda	-	7.22	86.62	27.61
Kodungallur	-	7.87	57.59	10.56
Chalakkudy	-	12.35	68.52	7.95
Thrissur	13.78	22.54	26.11	10.69
Guruvayoor	1.45	10.81	69.60	18.98
Kunnāmkulam	1.52	19.42	73.39	14.88
Palakkad	2.14	3.75	27.38	13.51
Chittoor-Thathamangalam	1.33	6.73	51.61	7.14
Tirur	-	-	17.69	-
Malappuram	8.86	3.95	32.13	8.43
Kozhikode Corporation	6.67	16.28	13.75	4.44
Vadakara	4.83	17.74	39.91	25.75
Thalasseri	0.91	-	17.71	23.53
Kannur	7.33	16.67	39.75	16.28
Kasaragode	4.68	3.64	8.56	5.90

Table IV: Registration units with area and population - 1988

Municipality/ Corporation	No. of regist- ration	Area in Sq. K.M.	Area per reg. Units	Estima- ted popula- tion	Popula- tion per Reg. Unit.
1	2	3	4	5	6
Neyyattinkara	1	9.70	9.70	31354	31354
Thiruvananthapuram	15	74.93	4.99	545218	36348
Attingal	1	14.18	14.18	31703	31703
Kollam	3	18.48	6.16	148972	49658
Punalur	1	34.60	34.60	46984	46984
Kayamkulam	1	21.79	21.79	67232	67232
Mavelikkara	1	12.65	12.65	27316	27316
Alappuzha	2	46.77	23.38	177485	88743
Cherthala	1	16.19	16.19	43474	43474
Thiruvalla	1	27.87	27.87	54855	54855
Changanacherry	1	13.50	13.50	54607	54607
Kottayam	2	15.55	7.77	68125	34063
Palai	1	15.93	15.93	22672	22672
Vaikom	1	8.73	8.73	21928	21928
Muvattupuzha	1	13.18	13.18	27928	27928
Kochi Corporation	2	94.88	47.44	575517	287759
Aluva	2	7.18	3.59	26204	13102
Parur	1	9.03	9.03	27770	27770
Perumbavoor	1	13.59	13.59	24803	24803
Irinjalakuda	1	11.24	11.24	26614	26614
Kodungallur	1	17.30	17.30	30457	30457
Chalakkudy	1	25.23	25.23	45385	45385
Thrissur	6	12.65	2.10	79180	13197
Guruvayoor	1	6.49	6.49	19481	19481
Kunnamkulam	1	6.96	6.96	20266	20266
Palakkad	1	26.60	26.60	124146	124146
Chittoor-Thathamangalam	1	14.71	14.71	31878	31878
Tirur	1	16.59	16.59	48464	48464
Malappuram	1	33.60	33.60	46675	46675
Kozhikode Corporation	14	82.67	5.90	445655	31833
Vadakara	1	21.34	21.34	72897	72897
Thalasserry	13	15.35	7.67	80974	40487
Kannur	4	11.03	2.75	65491	16373
Kasaragod	2	16.63	8.34	50302	25151

Table V: Vital events registered during the year 1988

Municipality/ Corporation	Live births			Events to normal residents			No. of still births to total events			
	Total events		Total	Male		Total	Female		Total	
	Male	Female		Male	Female		Male	Female		
1	2	3	4	5	6	7	8	9	10	
Neyyattinkara	1976	1668	3644	182	138	320	7	8	9	10
Thiruvananthapuram	15968	16108	32076	7475	7022	14497	7	8	9	10
Attingal	367	369	736	78	86	164	7	8	9	10
Kollam	6590	5849	12439	1820	850	2670	7	8	9	10
Punalur	1341	1535	2876	321	337	658	7	8	9	10
Kayamkulam	1106	1026	2132	388	337	725	7	8	9	10
Mavelikkara	1871	1761	3632	218	185	403	7	8	9	10
Alappuzha	4341	4018	8359	1319	1241	2560	7	8	9	10
Cherthala	1373	1383	2756	253	227	480	7	8	9	10
Thiruvalla	3271	2763	6034	373	152	525	7	8	9	10
Changanacherry	1344	<del>1312</del> 1312	2656	281	311	592	7	8	9	10
Kottayam	2002	1950	3952	327	308	635	7	8	9	10
Pala	1485	1565	3050	82	89	171	7	8	9	10
Vaikom	553	594	1147	101	97	198	7	8	9	10
Muvattupuzha	1314	1192	2506	149	117	266	7	8	9	10
Kochi Corporation	8358	8067	16425	3824	3688	7512	7	8	9	10
Aluva	2572	2431	5003	122	83	205	7	8	9	10
Parur	1197	1168	2365	118	105	223	7	8	9	10
Perumbavoor	1670	1467	3137	145	127	272	7	8	9	10
Irinjalakkuda	600	554	1154	35	29	64	7	8	9	10
Kodungallur	1372	1181	2553	163	155	318	7	8	9	10
Chalakkudy	997	947	1944	133	131	264	7	8	9	10
Thrissur	6558	<del>1692</del> 1692	13250	631	680	1311	7	8	9	10
Guruvayoor	509	444	953	36	32	68	7	8	9	10
Kunnamkulam	997	1137	2134	38	35	73	7	8	9	10
Palakkad	4196	4000	8196	1165	1108	2273	7	8	9	10
Chittoor-Thathamangalam	800	790	1590	240	218	458	7	8	9	10

Handwritten corrections and totals at the top of the table:

- 15
- 48
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- 97
- 30

(Contd.)

(Table V contd.)

1	2	3	4	5	6	7	8	9	10
Tirur	2569	2598	5167	227	214	441	22	26	48
Malappuram	1393	1370	2763	262	269	531	29	22	51
Kozhikode	13163	12745	25908	5380	5154	10534	400	335	735
Vadakara	2576	2330	4906	465	493	958	14	19	33
Thalasserry	5117	5171	10288	726	1536	3262	69	53	122
Kannur	2407	2231	4638	512	521	1033	13	11	24
Kasaragode	2829 - 2887 - 5716 -			528	573	1101	51	42	93

(Table V contd.)

Municipality/ Corporation	No. of still births			Total events			No. of infant deaths		
	Events to normal residents			Events to normal residents			Events to normal residents		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	11	12	13	14	15	16	17	18	19
Neyyattinkara	-	-	-	15	12	27	35	3	4
Thiruvananthapuram	25	17	42	462	324	786	2153	95	248
Attingal	1	-	1	1	1	2	-	1	1
Kollam	14	12	26	118	111	229	47	28	75
Punalur	2	1	3	11	6	17	-	-	-
Kayamkulam	4	2	6	12	5	17	4	3	7
Mavelikkara	3	-	3	19	14	33	5	2	7
Alappuzha	4	7	11	129	110	239	37	29	66
Cherthala	5	1	6	31	23	54	1	3	4
Thiruvalla	3	3	6	47	26	73	3	1	4
Changanacherry	-	-	-	12	12	24	3	3	6
Kottayam	1	6	7	14	7	21	3	2	5
Pala	1	1	2	8	8	16	3	4	7
Vaikom	2	-	2	4	7	11	1	2	3

(Contd.)

(Contd.)

(Table V contd.)

	11	12	13	14	15	16	17	18	19
Muvattupuzha	-	-	-	5	8	13	1	-	1
Kochi Corporation	23	31	54	167	129	296	72	63	135
Aluva	-	-	-	16	12	28	-	-	-
Parur	1	2	3	12	8	20	3	2	5
Perumbavoor	-	-	-	20	19	39	2	1	3
Irinjalakkuda	-	1	1	6	4	10	-	1	1
Kodungallur	-	-	-	23	12	35	5	3	8
Chalakkudy	1	-	1	5	5	10	1	1	2
Thrissur	2	4	6	144	131	275	27	20	47
Guruvayoor	-	-	-	6	7	13	-	-	-
Kunnamkulam	-	-	-	15	23	38	-	-	-
Palakkad	16	10	26	109	85	194	17	8	25
Chittoor-Thathamangalam	1	5	6	11	14	25	5	5	10
Tirur	-	-	-	57	41	98	4	-	4
Malappuram	-	-	-	43	34	77	3	1	4
Kozhikode Corporation	112	93	205	898	630	1528	217	129	346
Vadakara	-	-	-	28	19	47	3	2	5
Thalasserry	32	31	63	57	59	116	21	14	35
Kannur	4	6	10	45	37	82	23	16	39
Kasaragod	4	3	7	50	37	87	13	10	23

(Table V contd.)

Municipality/ Corporation	No. of other - deaths			Events to normal residents			No. of maternal deaths	
	Total events			Events to normal residents			Total events	Events to normal residents
	Male	Female	Total	Male	Female	Total		
1	20	21	22	23	24	25	26	27
Neyyattinkara	146	129	275	59	36	95	-	-
Thiruvananthapuram	3384	2859	6243	1212	472	1684	2	1

(Contd.)



(Table V contd.)

1	20	21	22	23	24	25	26	27
Attingal	52	48	100	45	46	91	-	-
Kollam	925	<del>664</del> 669	<del>1589</del> 1594	313	160	473	72	3
Punalur	187	<del>99</del> 100	<del>286</del> 287	84	94	178	1	-
Kayamkulam	203	129	332	166	101	267	-	-
Mavelikkara	178	125	303	90	74	164	-	-
Alappuzha	1083	640	1723	856	466	1322	-	-
Cherthala	315	195	510	117	101	218	-	-
Thiruvalla	426	276	702	85	59	144	1	-
Changanacherry	190	111	301	98	89	187	-	-
Kottayam	276	216	492	132	105	237	-	-
Pala	167	105	272	22	18	40	-	-
Vaikom	121	84	205	59	49	108	-	-
Muvatpuzha	124	78	202	34	26	60	-	-
Kochi Corporation	2721	1480	4201	1548	956	2504	-	-
Aluva	222	109	331	36	23	59	-	-
Parur	198	126	324	76	66	142	-	-
Perumbavoor	143	103	246	55	44	99	-	-
Irinjalakkuda	115	107	222	72	78	150	1	-
Kodungallur	178	<del>104</del> 114	<del>282</del> 292	92	66	158	1	-
Chalakkudy	200	101	301	98	68	166	-	-
Thrissur	1204	738	1942	132	119	251	6	-
Guruvayoor	100	61	161	48	51	99	-	-
Kunnamkulam	189	93	282	57	34	91	-	-
Palakkad	821	479	1300	363	226	589	-	-
Chittoor-Thathamangalam	180	127	307	113	97	210	-	-
Tirur	245	174	419	74	88	162	-	-
Malappuram	138	93	231	69	52	121	-	-
Kozhikode Corporation	3995	2268	6263	1704	1009	2713	-	-
Vadakara	278	192	470	161	118	279	-	-
Thalasserry	548	487	1035	111	101	212	-	-
Kannur	275	226	501	205	189	394	-	-
Kasaragode	293	<del>202</del> 200	<del>495</del> 493	84	73	157	-	-

Table VI: Deaths according to cause 1988

Municipality/ Corporation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		T.B.	Pla- gue	Cho- lera	Small pox	Dy- sen- tery	Resp- erat- ory dise- ases	Ente- ric fever	Rab- ies	Dipt- heria	Can- cer	Gast- ro- Ente- ritis	He- art fail- ure	Pulmo- nary dise- ases	Ot- hers	Total
Neyyattinkara		-	-	-	-	2	135	-	-	5	-	-	-	-	238	280
Thiruvananthapuram Corporation		98	-	-	-	218	-	84	-	-	62	216	2342	-	4011	7031
Attingal		-	-	-	-	-	-	1	1	-	5	-	24	-	71	102
Kollam		-	-	22	-	5	-	-	7	-	21	-	449	62	1259	1825
Punalur		-	-	5	-	-	-	2	-	-	-	-	-	12	285	304
Kayamkulam		11	-	-	-	2	36	1	-	-	7	-	57	6	229	349
Mavelikkara		1	-	-	-	-	76	3	-	-	14	-	88	13	141	336
Alappuzha		-	-	-	-	4	-	424	-	-	102	-	-	102	1330	1962
Cherthala		-	-	-	-	8	-	-	-	-	21	-	-	90	445	564
Thiruvalla		-	-	-	-	-	-	5	-	-	7	-	-	35	729	776
Changanacherry		-	-	-	-	2	-	5	-	-	16	-	-	5	297	325
Kottayam		14	-	-	-	1	-	1	2	-	-	2	-	493	513	
Pala		-	-	-	-	-	-	-	-	-	6	-	16	30	236	288
Vaikom		-	-	-	-	-	-	2	-	-	9	2	-	50	153	216
Muvattupuzha		-	-	-	-	-	-	3	-	-	9	-	55	-	148	215
Kochi Corporation		120	-	-	-	26	-	-	2	-	291	22	-	-	4036	4497
Aluva		-	-	-	-	1	-	-	-	-	6	-	-	18	334	359
Parur		-	-	-	-	4	-	-	-	-	8	-	186	-	146	344

(Contd.)

(Table VI contd.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Perumbavoor	-	-	-	-	6	-	-	-	-	10	-	-	-	269	285
Irinjalakuda	-	-	-	-	1	-	-	-	-	20	-	-	35	177	233
Kodungallur	-	-	-	-	1	-	7	-	-	14	-	-	142	153	317
Chalakkudy	-	-	-	-	1	11	1	-	-	5	-	69	13	211	311
Thrissur	-	-	-	-	6	-	-	5	-	66	-	78	-	2068	2223
Guruvayoor	-	-	-	-	-	16	6	-	-	7	-	22	-	123	174
Kunnamkulam	-	-	3	-	-	-	-	-	-	6	-	-	12	299	320
Palakkad	-	-	-	-	43	-	-	-	-	25	-	72	-	1354	1494
Chittoor-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thathamangalam	-	-	-	-	9	-	4	-	-	8	-	-	67	244	332
Tirur	16	-	-	-	2	-	97	-	-	18	4	17	-	363	517
Malappuram	-	-	-	-	4	-	8	-	-	14	-	-	15	267	308
Kozhikode Corpn.	210	-	2	-	-	-	2	-	-	332	29	-	-	7216	7791
Vadakara	-	-	-	-	-	-	-	-	-	9	1	-	53	454	517
Thalasserry	-	-	-	-	147	-	70	-	-	14	-	-	39	881	1151
Kannur	-	-	-	-	3	-	13	-	-	30	-	-	39	498	583
Kasaragode	-	-	-	-	18	-	25	-	24	15	-	-	120	292	494
														380	582

Table VII: Results of spot check - 1988

Municipality/ Corporation	No. of wards selec- ted	Total no. of house holds	No. of house holds visi- ted	No. of events to normal residents detected												
				Live births			Infant deaths			Other deaths						
				Enume- rated	Regis- tered	Occur- red	Enume- rated	Regis- tered	Occur- red	Enume- rated	Regis- tered	Occur- red	Enume- rated	Regis- tered	Occur- red	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Neyyattinkara	15	6514	6514	372	93	215	-	-	-	37	19	7				
Thiruvananthapuram	15	27298	27298	1527	1477	50	-	-	-	626	592	7				
Attingal	15	4548	4548	342	73	267	4	-	2	100	69	29				

(Contd.)

(Table VII contd.)

1	2	3	4	5	6	7	8	9	10	11	12	13
Kollam	18	12746	12746	1114	921	191	14	13	-	194	177	12
Punalur	15	6367	6367	269	178	86	-	-	-	44	37	3
Kayamkulam	15	5479	5479	361	198	161	-	-	-	81	54	15
Mavelikkara	15	4228	4228	275	180	95	2	1	1	129	107	19
Alappuzha	18	15525	15525	1374	1127	241	20	15	2	391	347	12
Cherthala	15	6098	6098	228	127	99	2	2	-	96	61	17
Thiruvalla	15	5866	5866	287	190	96	5	5	-	50	46	2
Changanacherry	15	6130	6130	176	109	67	1	1	-	86	58	28
Kottayam	15	8210	8210	370	179	190	2	-	1	136	91	40
Pala	15	2755	2755	142	94	48	-	-	-	37	24	12
Vaikom	15	3772	3772	147	49	97	-	-	-	58	47	9
Muvattupuzha	15	6412	6412	344	163	157	-	-	-	60	40	12
Kochi Corporation	15	23645	23645	1500	1042	361	4	3	1	481	368	18
Aluva	15	3384	3384	219	93	123	-	-	-	59	40	11
Parur	15	3757	3757	322	151	168	1	1	-	113	81	17
Perumbavoor	15	3556	3556	231	117	114	-	-	-	73	59	12
Irrinjilakkuda	15	3772	3772	314	42	272	-	-	-	134	90	37
Kodungallur	15	4311	4311	345	167	178	5	2	3	134	117	15
Chalakkudy	15	4192	4192	324	102	222	-	-	-	88	71	7
Thrissur	15	6466	6466	452	288	118	-	-	-	159	110	17
Guruvayoor	10	3341	3341	227	68	158	-	-	-	137	99	26
Kunnamkulam	15	3593	3593	248	65	182	-	-	-	121	83	18
Palakkad	15	8803	8803	515	366	141	4	4	-	181	150	25
Chittoor-												
Thathamangalam	15	3508	3508	155	74	80	1	-	-	111	97	8
Tirur	15	3655	3655	277	228	49	3	3	-	52	52	-
Malappuram	15	4563	4563	582	360	187	1	1	-	82	72	7
Kozhikode Corpn.	15	15988	15988	1229	980	169	-	-	-	315	252	14
Vadakara	15	4827	4827	654	374	261	11	-	7	156	102	36
Thalasserri	15	5301	5301	401	327	71	-	-	-	102	78	24
Kannur	15	8608	8608	317	177	126	-	-	-	43	30	7
Kasaragode	15	4165	4165	444	387	38	-	-	-	117	106	7

Table VIII: Registered vital rates and adjusted residential vital rates 1988

Municipality/ Corporation	Registered vital Rates		Adjusted Residential Vital Rates	
	Births	Deaths	Births	Deaths
1	2	3	4	5
Neyyattinkara	10.21	3.16	40.85	6.15
Thiruvananthapuram Corpn.	26.59	3.55	27.49	3.59
Attingal	5.17	2.90	24.21	4.13
Kollam	17.92	3.70	21.65	4.05
Punalur	14.00	3.79	21.15	4.51
Kayamkulam	10.78	4.08	19.66	6.12
Mavelikkara	14.75	6.26	22.54	7.59
Alappuzha	14.42	7.82	17.58	8.88
Cherthala	11.04	5.11	19.81	7.95
Thiruvalla	16.80	4.74	25.38	5.12
Changanacherry	10.84	3.53	17.50	5.21
Kottayam	9.32	3.55	19.26	5.25
Palai	7.54	2.07	11.39	3.20
Vaikom	4.65	3.97	13.94	4.90
Muvattupuzha	9.52	2.18	20.09	3.28
Kochi Corporation	13.05	4.59	18.79	6.01
Aluva	7.82	2.25	18.41	3.32
Parur	8.03	5.29	16.89	7.36
Perumbavoor	10.97	4.11	21.66	5.09
Irinjalakkuda	2.40	5.71	17.94	8.50
Kodungallur	10.44	5.45	21.52	6.62
Chalakkudy	5.82	3.71	18.49	4.60
Thrissur	16.56	3.76	26.00	5.43
Guruvayoor	3.49	5.08	11.64	7.04
Kunnamkulam	3.60	4.49	13.75	6.54
Palakkad	18.31	4.95	25.76	5.94
Chittoor-				
Thathamangalam	14.37	6.90	30.09	7.97
Tirur	9.10	3.43	11.06	3.43
Malappuram	11.38	2.68	18.40	3.05
Kozhikode Corpn.	23.64	6.86	29.37	8.57
Vadakara	13.14	3.90	22.98	6.38
Thalasserry	40.28	3.05	49.40	3.99
Kannur	15.77	6.61	28.25	9.47
Kasaragode	21.89	3.58	29.11	3.79

Table IX: Adjusted residential vital rates from 1983 to 1988

Municipality/ Corporation	Birth rate						Death rate					
	1983	1984	1985	1986	1987	1988	1983	1984	1985	1986	1987	1988
	2	3	4	5	6	7	8	9	10	11	12	13
Neyyattinakara	38.74	27.43	34.62	27.40	31.55	40.85	6.56	6.71	6.53	7.11	5.84	6.15
Thiruvananthapuram	19.55	24.17	27.94	27.56	27.05	27.49	5.16	5.52	8.02	6.15	3.79	3.59
Attingal	13.91	16.01	14.54	13.33	11.42	24.21	3.92	3.79	4.18	3.75	5.16	4.13
Kollam	19.98	23.15	24.20	20.90	22.59	21.65	4.24	5.05	4.85	5.05	4.25	4.03
Punalur	21.09	21.15	21.10	19.99	20.55	21.15	5.18	4.59	4.86	3.47	4.92	4.51
Kayamkulam	26.75	23.28	29.27	20.95	25.02	19.66	6.65	6.02	6.12	5.75	6.01	6.12
Mavelikkara	22.14	19.50	21.19	28.55	25.00	22.54	6.62	7.91	6.45	6.23	6.18	7.59
Alappuzha	21.44	21.74	21.56	20.42	16.60	17.58	6.67	6.24	6.97	6.77	6.11	8.88
Cherthala	26.34	24.61	24.48	22.78	22.15	19.81	6.38	7.14	6.30	6.97	7.72	7.95
Thiruvalla	17.27	23.77	16.61	15.96	21.51	25.38	6.21	6.26	4.24	7.91	9.64	5.12
Changanacherry	25.18	23.84	21.68	19.45	15.76	17.50	7.53	5.46	4.58	4.48	4.62	5.21
Kottayam	20.84	19.59	17.82	19.99	22.47	19.26	5.32	4.25	5.24	6.73	4.61	5.25
Pala	16.17	12.32	16.79	13.14	10.40	11.39	4.53	5.59	4.86	3.23	3.55	3.20
Vaikom	15.18	15.08	19.08	28.01	26.48	13.94	3.89	4.24	6.91	4.75	5.86	4.90
Muvattupuzha	32.62	21.60	23.71	16.47	22.85	20.09	1.03	5.26	3.99	2.89	3.85	3.28
Kochi Corporation	25.66	26.41	24.04	23.17	20.25	18.79	6.98	7.20	5.91	6.38	6.79	6.01

(Contd.)

(Table IX contd.)

1	2	3	4	5	6	7	8	9	10	11	12	13
Aluva	24.66	22.04	20.49	17.23	15.82	18.41	8.10	4.60	4.91	5.15	4.43	3.32
Parur	18.80	16.13	24.08	27.22	17.06	16.89	5.88	5.53	6.26	6.51	8.70	7.36
Perumbavoor	19.50	28.76	26.13	18.06	19.82	21.66	5.01	8.95	5.54	5.65	5.12	5.09
Irinjalakkuda	31.26	33.10	35.33	22.61	27.46	17.94	5.52	6.71	7.73	5.55	7.65	8.50
Kodungallur	20.94	16.86	21.83	18.38	18.71	21.52	6.33	5.23	5.08	5.26	7.32	6.62
Chalakkudy	18.50	18.37	17.99	17.62	16.44	18.40	4.50	6.35	5.46	5.12	6.00	4.60
Thrissur	25.34	24.08	23.07	21.79	24.03	26.00	6.07	6.91	5.36	4.31	4.85	5.43
Guruvayoor	15.27	15.49	15.24	14.30	14.81	11.64	5.25	7.08	6.01	6.56	6.13	7.04
Kunnamkulam	17.51	17.95	19.03	16.97	13.18	13.75	7.05	7.12	6.34	7.95	6.62	6.54
Palakkad	26.68	31.83	31.45	29.96	27.37	25.76	7.26	7.13	6.16	6.63	6.21	5.94
Chittoor-												
Thathamangalam	15.87	17.28	24.22	28.54	31.85	30.09	7.69	7.30	7.69	8.22	6.95	7.97
Tirur	19.52	16.89	16.39	14.09	11.79	11.06	4.12	3.79	3.23	3.07	2.81	3.43
Malappuram	30.01	20.47	21.72	22.92	21.63	18.40	4.85	3.53	3.78	3.76	3.89	3.05
Kozhikode Corpn.	40.63	30.74	30.40	27.21	22.22	29.37	10.42	8.87	8.57	8.83	8.23	8.57
Vadakara	25.62	26.75	24.80	22.87	21.68	22.98	7.80	6.49	6.48	6.20	6.39	6.38
Thalasserry	9.61	7.35	44.50	39.75	44.80	49.40	3.68	4.37	4.10	3.28	3.57	3.99
Kannur	30.54	32.97	25.22	20.61	22.98	28.25	4.94	3.90	4.87	5.90	10.75	9.47
Kasaragod	36.05	39.12	39.55	45.55	45.95	25.11	4.38	4.33	4.03	4.30	4.22	3.79







