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**GOVERNMENT OF KERALA**

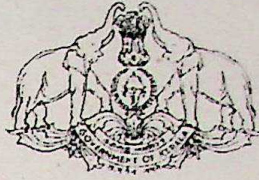
**RESIDENTIAL VITAL RATES  
2002**

Directorate of Economics & Statistics  
Thiruvananthapuram  
2006









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## **PREFACE**

This report presents the adjusted vital rates of births and deaths in the selected Municipalities and Corporations for the year 2002. The rates have been estimated from the registered births and deaths of the normal residents after making adjustments for under registration and for the same occurring outside the Municipal/Corporation areas, using the results of spot check survey conducted in the selected Municipalities and Corporations. Twenty-nine Municipalities and five Corporations are covered in the report. The reports from Thrissur Corporation and Punalur Municipality have not been incorporated due to non-availability of the data in time. The vital statistics unit of the Department of Economics and Statistics has prepared the report under the supervision of Sri. Gangadhara Murugan, Additional Director. Smt. C.M. Kumari Valsala, Deputy Director and Sri. Roy Thomas, Assistant Director and Smt. Manorama, Research Assistant have contributed substantially in bringing out the report.

Thiruvananthapuram,  
05.10.2005

**Gangadhara Murugan**  
**Additional Director (G) I/C**  
**Director**



# RESIDENTIAL VITAL RATES 2002

## Introduction

The Civil Registration System was introduced in India under the Births and Deaths Registration Act charted by parliament in 1969. The Act stipulates that every event must be registered in the respective registration units based on the place where the events occurred. As per the existing rule every event should be registered within 21 days from the date of its occurrence. Even though the Act stipulates both fine and punishment, under registration of events exists to a certain extent, quite often the same case not carried out. This causes inaccuracy in the total data available. In order to ward off such inaccuracies, a corrective measure is devised, the spot check survey. More over the act stipulates that registration is to be carried out in the place of occurrence of the event. This may not provide a true disaggregate picture. The present set up of spot check survey is to tide over that.

One of the important classifications in population data is the urban and rural one. In Kerala the number of vital events happening in urban areas is always higher than that in the rural areas. It shows that the rate of urban registration of vital events is always higher than the rural registration rate. Health services facilities of higher order are generally available in the urban areas. Rural people, because of their knowledge on health activities and access to such facilities usually resort to urban areas to avail themselves of modern medical facilities. Usually the under registration in rural areas is higher than that in urban area especially in the case of deaths. This is because most of the deaths in rural areas happen in the house and the rural people are not interested to register deaths due to unawareness about the importance of registration. Another noteworthy fact is that both rural and urban population tends to hide incidence of suicide and illicit termination of pregnancy due to sociological reasons.

## Coverage of the survey

The Scheme, Spot check Survey, aims at estimating the adjusted residential vital rates in the selected municipalities and City Corporations and ascertaining the extent of under/over registration of vital events. The scheme is designed to strengthen the Vital Statistics in the selected Municipalities and corporations. It is implemented in five Corporations and twenty-nine Municipalities in the State. The fieldwork pertaining to the survey was carried out in all centers except Thrissur Corporation and Punalur municipality during the year 2003. For conducting fieldwork of the survey fifteen wards have been randomly selected from each unit excepting Alappuzha and Guruvayur Municipalities. All the wards of the Guruvayoor municipality and eighteen wards from Alappuzha Municipality have been



selected for the survey. The statistical staff posted in the Municipalities/Corporations have visited all houses of the selected wards and collected the required data in the prescribed schedules of the survey

### **Objectives of the survey**

1. To estimate the extent of under/ ~~over~~ registration of vital events in the selected Municipalities/Corporations and to work out the actual vital rates in these areas.
2. To estimate the residential vital rates of these Municipalities/Corporations
3. To find out the major diseases that lead to death

### **Limitations of the survey**

One striking limitation of the survey is that the wards covered are a few and far between. The objective of the survey is to find out the under/ ~~over~~ registration of vital events. However, the data derived from the survey is partial. For obtaining under registration in urban areas, it should be extended to the remaining urban areas of the State also. In order to obtain a total picture of the rate of under –registration in urban areas, the remaining urban areas of the state should also be brought under the purview of the survey. If this survey is extended to rural areas, a comparative study between urban and rural level of under registration could also be made possible. Similarly the State level under registration can be estimated only if this survey is further extended to rural areas of the State and the remaining Municipalities of the State.

### **Findings of the Survey**

#### **Table 1**

It presents the estimated midyear population of the selected Municipalities and Corporations. It is obvious from the table that the population of all Municipalities/Corporations shows an increasing trend. Out of 34 selected centers, the maximum projected population is in Thiruvananthapuram Corporation. While in the case of Municipality it is in Alappuzha. The population projected is the minimum in the case of Guruvayoor Municipality.



## Table 2

This table shows the number of hospitals and other facilities both in the public and private sector existing in these Municipalities/Corporations. Number of hospitals is higher in the private sector than in the Government sector. All centers have at least one public hospital. Among all centers, Thiruvananthapuram Corporation has the maximum number of public hospitals with nineteen followed by Cochin Corporation with eighteen. In the case of Municipalities Alappuzha has the highest number of government hospitals. Considering the bedding capacity in public hospitals it is also the maximum in Thiruvananthapuram Corporation with 7077 numbers followed by Kozhikode Corporation with 4060 numbers. The number of private hospitals is the maximum in Cochin Corporation with 76 followed by Thiruvananthapuram and Kozhikode with 47 and 37 numbers respectively.

In the case of public dispensaries and other institutions it is the maximum in Thiruvananthapuram Corporation with twenty-one followed by Kozhikkode Corporation with sixteen. In the case of private dispensaries and other institutions, it is the maximum in Alappuzha with 127 followed by Kozhikkode Corporation with 99

The number of maternity and child health centers in public sector stands at 24 in Kozhikode Corporation and 14 in Cochin Corporation followed by Kollam Corporation with 13. Out of 34 centers 6 centers have got one maternal and child health center each. Except in the Thiruvananthapuram Corporation such facilities do not exist anywhere else in the private sector in the entire state.

## Table 3

This table furnishes the details regarding the number of registration units, area and population of the selected centers. Based on the area-wise classification, Thiruvananthapuram Corporation is the largest among them with 141.71sq.km followed by Kochi Corporation with 94.80 sq.km. Among Municipalities, it is Alappuzha that covers the

largest area with 46.77 sq.km. followed by Kunnankulam with 34.18 sq.km. Considering the density of population it is the highest in Kollam Corporation with 6373 people (per sq.km.) followed by Kochi Corporation with 6322 people per sq.km. In the case of Municipality, it is the highest in Kannur with 5839 numbers (per sq.km.) and lowest is in Pala Municipality with 1423 numbers(per sq.km.).

#### **Table 4**

This table represents the number of burial grounds and cremation grounds in the selected centres. Regarding the municipal burial grounds, it is the maximum in Cochin Corporation with 8 followed by Palakkad Municipality and Thiruvananthapuram Corporation with 4 numbers each. There are Private burial grounds in all centers, the number of private burial grounds being higher than the municipal burial grounds in almost all centres.

Private cremation grounds do not exist in 10 centres. The Kochin Corporation having the maximum number of private burial grounds with 40 followed by Kollam Corporation with 37, The Thiruvananthapuram Corporation has got only 30 private burial grounds

#### **Table 5**

This table shows the total number of vital events registered in the respective Municipality/Corporation and, the number of vital events of the usual residents registered in the registration units. The maximum number of Live births was registered in Kozhikkode Corporation with 38795 of which 8923 events pertained to the normal residents. Thiruvananthapuram Corporation followed it with registering 38584 live births. In the case of Municipalities it was the maximum in palakkad Municipality with 13555 and the lowest number of live births was registered in Chittor Municipality with 291 of which the events related to normal residents stood at twenty-two only.



The maximum number of still births was registered in Kozhikode Corporation with 665 of which 235 events pertained to the events of normal residents, next was in Thiruvananthapuram Corporation with 147 numbers.

In the case of infant deaths it was registered the highest in Kozhikode Corporation with 796 of which the male and female breakup stood at 477 and 319 respectively. Of this, Infant deaths in respect of normal residents were 301. The Thiruvananthapuram Corporation follows with 667 numbers. In respect of Municipalities, it was the highest in Alappuzha with 198 and the events relating to normal residents numbered 36. Infant death was not registered in Attingal, Vaikom, Kottayam, Chittoor Thathamangalm and Guruvayaur Municipalities during the year under survey.

The number of deaths registered during the year under report was the highest in Thiruvananthapuram Corporation with 10226, followed by Kozhikode Corporation with 8747 numbers. In the case of Municipalities, it was the highest in Alappuzha with 2414 numbers of which the number of deaths registered in case of normal residents was 1062. Next it was Palakkad Municipality with 1961 numbers. However the lowest number of deaths was registered in Guruvayoor Municipality with 132 numbers and Attingal with 202 numbers.

#### **Table No.6**

The survey results record that the major causes of death were respiratory diseases, cancer, heart failure, pulmonary diseases tuberculosis and others. The highest incidence of death was registered at Kozhikode Corporation with 8747 of which 1115 deaths were due to cardiac arrest, 714 due to cancer, 491 due to tuberculosis, 94 due to pulmonary disease and the remaining were due to other diseases or causes. Deaths due to AIDS have been reported from Kozhikode and Cochin corporation and North Paravur Municipality. No specific cause of death has been reported from 8 municipalities and Thiruvananthapuram and Kollam Corporations

### Table No.7

This table presents the results of the spot check survey of these selected units.

The data show that all live birth events were registered in the respective registration units

Infant death was enumerated by the staff concerned in the municipalities of Neyyattinkara

,Attingal,Kayamkulam ,Mavelikkara Alappuzha, Changanassery Pala, Muvattupuzha

,Chalakudy, Guruvayur ,Kunnankulam Palakkad, and Vadakara and Kollam Corporation.

Whereas all the infant deaths were either registered or events happened in the out side area except in Chalakudy and Vadakara

[In the case of deaths which occurred in the registration units all enumerated deaths had been registered in all centres except Thiruvananthapuram Kollam, and kozhikode Corporations, ,Kayamkulam, Mavelikkara, Alappuzha, Chertihala, Changanassery, Palai,Muvattupuzha, Aluve, Perumbavoor, Chalakudy, Guruvayur, Palakkad, Thirur, Vadakara and Thalassery Municipalities. As such, the survey result shows that the number of death occurred inside area were also higher in most of the centres,

### Table 8

This table presents the percentage of under registration and the percentage of outside events in the selected units. As for the registration of births, Cent Percent registration was done. As regards deaths, cent percent death registration was reported from fourteen centers while under registration of events reported from the remaining.The highest under registration 17.76% was reported from Kayamkulam followed by Guruvayoor with 13.16% whereas it has been found to be lowest in the Kollam Corporation with .003%.

The percentage of outside events of births has been the highest in Guruvayur Municipality with 90.66%. At the same time it was the lowest in Thirvanathapuram Corporation with 4.54%. In the case of deaths, outside events that occurred have been



the highest in kannur Municipality with 85.71 % followed by Kottayam with 61.80% and no such case is reported in Thirvanathapuram

### **Table No.9**

This table displays the registered vital rates and Adjusted Residential vital rates in these Municipalities/Corporations.

The registered birth rate is the highest in Thalassery municipality with 34.70% followed by Kozhikode, Corporation with 20.33% At the same time, it is the lowest in Vaikom Municipality with 0.11%. As regards registered death rates it is highest in Kochin Corporation with 6.84% followed by Mavelikkara Municipality and Kozhikode Corporation with 6.78% and the same have been the lowest in Vaikom Municipality with 0.16%.

Adjusted residential vital rates of Births are reported the highest in Nayyattinkara with 38.82% followed by Thalassery Municipality with 38.03% The same is reported the lowest in Vaikom Municipality. As regards the adjusted residential vital rates of deaths, it is the highest in Kannur Municipality with 18.95% followed by Aluva Municipality with 8.45% The same is the lowest in Vaikom Municipality with 0.27%

### **Conclusion**

The survey was successfully completed in four city Corporations and in twenty-eight selected Municipalities during the year 2003. The survey result reveals that under registration of vital events still exists to a certain extent in Kerala and hence cent percentage of civil registration was not achieved during the year under report also. Spot check survey helps to find out the unregistered events and thereby the concerned authorities can take necessary steps to minimize the extent of under registration.

Table 1 - Estimated Mid-year Population of Municipalities and Corporations : 2002 (as on 1st July)

Sl. No.	Municipality/ Corporation	2001 Census Population	Population as on 2002 1st July	Percentage Growth
1	2	3	4	5
1	Neyyattinkara	69467	70362	1.29
2	Thiruvananthapuram Corporation)	744983	754576	1.29
3	Attingal	35693	36122	1.20
4	Kollam Corporation	361560	365047	0.96
5	Punalur	47235	47364	0.27
6	Kayamkulam	68585	68778	0.28
7	Mavelikara	28439	28458	0.07
8	Alappuzha	177029	177346	0.18
9	Cherthala	45105	45348	0.54
10	Thiruvalla	56837	57117	0.49
11	Changanacherry	51967	52468	0.96
12	Kottayam	60728	61311	0.96
13	Palai	22640	22858	0.96
14	Vaikom	22641	22859	0.96
15	Muvattupuzha	29246	29473	0.78
16	Kochi Corporation	595575	599835	0.72
17	Aluva	24110	24420	1.28



Table 1 - (Contd.)

Sl. No.	Municipality/ Corporation	2001 Census Population	2002	Percentage Growth
1	2	3		11
18	Paravur	30059	30358	0.99
19	Perumbavoor	26547	26808	0.98
20	Irinjalakuda	28873	29063	0.66
21	Kodungallur	33539	33857	0.95
22	Chalakudy	48380	48840	0.95
23	Thrissurcorp.	317526	321101	1.13
24	Guruvayoor	21186	21319	0.63
25	Kunnamkulam	51592	52173	1.13
26	Palakkad	130767	131798	0.79
27	Chittoor-Thathamangalam	31886	32296	1.29
28	Thirur	53654	54241	1.09
29	Malappuram	58491	59777	2.20
30	Kozhikode Corpo.	436556	438838	0.52
31	Vadakara	75847	76314	0.62
32	Thalassery	99387	100989	1.61
33	Kannur	63797	64412	0.96
34	Kasaragod	52634	53034	0.76

Table 2 - Number of Hospitals and other Institutions 2002

Sl. No.	Municipality/ Corporation	Hospitals						Dispensaries & other Institutions						Maternity & Child Health Center					
		Public			Private			Total			Public			Private			Total		
		No.	Beds		No.	Bed s		No.	Bed s		No.	Bed s		No.	Bed s		No.	Bed s	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Neyyattinkara	2	436	6	50	8	486	1	-	11	-	12	-	2	-	-	-	2	-
2	Thiruvananthapuram corp.	19	7077	47	2097	66	9174	21	-	57	-	78	-	3	-	4	-	7	-
3	Attingal	2	84	8	420	10	504	3	-	23	-	26	-	4	-	-	-	4	-
4	Kollam corp.	9	1485	30	1864	39	3349	11	-	92	-	103	-	13	-	-	-	13	-
5	Punalur																		
6	Kayamkulam	3	180	11	400	14	580	-	-	25	-	25	-	-	-	-	-	-	-
7	Mavelikkara	2	267	7	315	9	582	-	-	10	-	10	-	-	-	-	-	-	-
8	Alappuzha	8	1548	5	120	13	1668	3	-	127	-	130	-	6	-	-	-	6	-
9	Cherthala	3	286	5	425	8	711	-	-	36	-	36	-	5	-	-	-	5	-
10	Thiruvalla	3	200	6	1250	9	1450	-	-	15	-	15	-	-	-	-	-	-	-
11	Changanacherry	2	214	13	205	15	419	-	-	38	-	38	-	4	-	-	-	4	-
12	Kottayam	4	503	12	609	16	1112	-	-	-	-	-	-	-	-	-	-	-	-
13	Palai	3	194	11	575	14	769	-	-	30	-	30	-	1	-	-	-	1	-
14	Vaikom	2	298	1	15	3	313	1	20	24	-	25	20	1	-	-	-	1	-
15	Muvattupuzha	3	298	10	437	13	735	1	-	36	-	37	-	2	-	-	-	2	-
16	Kochi Corporation	18	2012	76	4165	94	6177	6	-	78	-	84	-	14	-	-	-	14	-
17	Aluva	2	237	10	720	12	957	-	-	34	-	34	-	-	-	-	-	-	-

Table 2 (Contd....)

Sl. No.	Municipality/ Corporation.	Hospitals						Dispensaries & other Institutions						Maternity & Child Health Centre					
		Public			Private			Total			Public			Private			Total		
		No.	Bed s	No. of Bed s	No.	Bed s	No. of Bed s	No.	Bed s	No. of Bed s	No.	Bed s	No. of Bed s	No.	Bed s	No. of Bed s	No.	Bed s	No. of Bed s
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	Paravur	3	199	8	436	11	635	10	-	13	-	23	-	2	-	-	-	2	-
19	Perumbavoor	2	231	6	463	8	694	1	-	24	-	25	-	6	-	-	-	6	-
20	Irinjalakuda	2	236	5	124	7	360	3	-	5	-	8	-	-	-	-	-	-	-
21	Kodungallur	2	201	6	480	8	681	-	-	30	-	30	-	-	-	-	-	-	-
22	Chalakydy	1	144	9	571	10	715	2	-	25	-	27	-	2	-	-	-	2	-
23	Thrissur corp.																		
24	Guruvayur	1	30	5	184	6	214	-	-	-	-	-	-	1	-	-	-	1	-
25	Kunnamkulam	4	124	5	565	9	689	4	-	-	-	4	-	1	-	-	-	1	-
26	Palakkad	4	739	21	612	25	1351	4	-	15	-	19	-	4	-	-	-	4	-
27	Chittoor- Thathamangalam	2	128	1	10	3	138	1	-	13	6	20	-	-	-	-	-	-	-
28	Thirur	6	199	-	300	6	499	6	-	-	-	6	-	3	-	-	-	3	-
29	Malappuram	4	281	4	357	8	638	1	-	31	-	32	-	-	-	-	-	-	-
30	Kozhikode Corpor.	9	4060	37	2072	46	6132	16	-	99	-	113	-	24	-	-	-	-	-
31	Vadakara	2	240	14	440	16	630	1	-	97	-	98	-	1	-	-	-	1	-
32	Thalassery	2	556	23	839	25	1395	3	-	14	-	17	-	-	-	-	-	-	-
33	Kannur	2	125	29	773	31	898	1	16	-	-	1	16	1	5	-	-	-	-
34	Kasaragod	2	236	10	520	12	756	1	-	21	-	22	-	-	-	-	-	-	-



Table 3 - Registration units with Area and Population 2002

SL no	Municipality / Corporation	No of Reg units	Area in sqkm	Area Per Reg units	Mid year population	Population per Reg units	Density per Sq km
1	2	5	6	7	8	9	10
1	Neyyattinkara	1	28.78	28.78	70362	70362	2445
2	Thiruvananthapuram	20	141.71	7.07	754576	37728	5325
3	Attingal	1	14.78	14.78	36122	36122	2444
4	Kollam	1	57.28	57.28	365047	365047	6373
5	Punalur						
6	Kayamkulam	1	21.78	21.78	68778	68778	3158
7	Mavelikara	1	12.65	12.65	28458	28458	2250
8	Alappuzha	2	46.77	23.39	177346	88673	3792
9	Cherthala	1	16.18	16.18	45348	45348	2803
10	Thiruvalla	1	27.52	27.52	57117	57117	2075
11	Changanacherry	1	13.50	13.50	52468	52468	3887
12	Kottayam	2	16.45	8.22	61311	30655	3727
13	Palai	1	16.06	16.06	22858	22858	1423
14	Vaikom	1	8.73	8.73	22859	22859	2618
15	Muvattupuzha	1	13.18	13.18	29473	29473	2236
16	Kochi Corporation	2	94.88	47.44	599835	299917	6322
17	Aluva	1	7.18	7.18	24420	24420	3401

Table 3 (Contd...)

Sl.No	Municipality/ Corporation	No. of Reg. units	Area in Sq.km	Area per Reg. Units	Mid year popula-tion	Population per Reg. units	Density per Sq.Km.
1	2	5	6	7	8	9	10
18	Paravur	1	9.02	9.02	30358	30358	3366
19	Perumbavoor	1	13.61	13.61	26808	26808	1970
20	Irinjalakuda	1	11.24	11.24	29063	29063	2586
21	Kodungallur	1	17.40	17.40	33857	33857	1946
22	Chalakudy	1	25.23	25.23	48840	48840	1936
23	Thrissur				321101		
24	Guruvayoor	1	7.48	7.48	21319	21319	2850
25	Kunnamkulam	1	34.18	34.18	52173	52173	1526
26	Palakkad	1	26.60	26.60	131798	131798	4954
27	Chittoor- Thathamangalam	1	14.71	14.71	32296	32296	2196
28	Thirur	1	16.55	16.55	54241	54241	3277
29	Malappuram	1	33.69	33.69	59777	59777	1774
30	Kozhikode Corp.	14	84.20	6.01	438838	31346	5212
31	Vadakara	1	21.34	21.34	76314	76314	3576
32	Thalassery	3	23.98	11.99	100989	50495	4211
33	Kannur	1	11.03	11.03	64412	64412	5839
34	Kasaragod	1	16.69	16.69	66703	66703	3996

**Table 4 - Number of Burial Grounds, Cremation Grounds and Civil Registration Units**

Sl. No	Municipality/ Corporation	Burial Grounds			Cremation Grounds			Total no. of Registration units	
		Mun/ Corp	Private	Total	Mun/ Corp.	Private	Total	No. of wards	No. of units
1	2	3	4	5	6	7	8	9	10
1	Neyyattinkara	1	4	5	-	3	3	37	1
2	Thiruvananthapuram	4	30	34	1	0	1	81	20
3	Attingal	1	1	2	-	5	5	24	1
4	Kollam	2	37	39	2	1	3	50	1
5	Punalur								
6	Kayamkulam	1	14	15	1	2	3	38	1
7	Mavelikara	1	9	10	-	1	1	23	1
8	Alappuzha	3	2	5	-	19	19	50	2
9	Cherthala	-	5	5	1	4	5	28	1
10	Thiruvalla	1	1	2	1	-	1	32	1
11	Changanacherry	1	12	13	-	1	1	32	1
12	Kottayam	1	15	16	1	2	3	37	2
13	Palai	1	6	7	1	-	1	20	1
14	Vaikom	1	1	2	-	-	-	20	1
15	Muvattupuzha	1	8	9	-	-	-	20	1
16	Kochi Corporation	8	40	48	5	11	16	66	2
17	Aluva	-	7	7	-	3	3	21	1
18	N.Paravur	1	5	6	-	1	1	22	1
19	Perumbavoor	1	8	9	-	1	1	21	1
20	Irinjalakuda	1	5	6	-	1	1	22	1
21	Kodungallur	-	2	2	1	1	2	24	1
22	Chalakydy	2	8	10	-	1	1	28	1
23	Thrissur								
24	Guruvayoor	1	4	5	1	1	2	20	1
25	Kunnamkulam	2	11	13	-	-	-	38	1
26	Palakkad	4	7	11	3	1	4	50	1
27	Chittoor- Thathamangalam		1	1	-	-	3	24	1
28	Thirur	2		2				28	1
29	Malappuram	1	10	11	-	1	1	24	1
30	Kozhikode Corpor.	2	9	11	4	2	6	39	14
31	Vadakara	1	8	9	-	-	-	40	1
32	Thalasserry	1	15	16	1	11	12	50	3
33	Kannur	1	13	14	1	-	1	38	1
34	Kasaragod	-	12	12	2	1	3	32	1

Table 5 - Vital events registered during the year 2002

Sl. No	Municipality/ Corporation	Live Births										Still Births				
		Total Events					Events to normal residents					Total Events				
		Male	Female	Total	Male	%	Female	%	Total	%	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Neyyattinkara	631	544	1175	180	28.53	203	37.32	383	32.59			0	0	0	0
2	Thiruvananthapuram	19629	18955	38584	-	-	-	-	-	-	78	69	147	N.A	N.A	N.A
3	Attingal	562	525	1087	82	14.59	70	13.36	152	13.98	-	-	-	-	-	-
4	Kollam	8319	7953	16272	2945	35.40	2762	34.73	5707	35.07	47	35	82	15	10	25
5	Punalur															
6	Kayamkulam	2473	2399	4872	358	14.48	344	14.34	702	14.41	4	3	7	-	-	-
7	Mavelikara	2020	1869	3889	153	7.57	163	8.72	316	8.10	1	3	4		1	1
8	Alappuzha	6285	5803	12088	1265	20.13	1246	21.47	2511	20.77	56	57	113	5	8	13
9	Cherthala	1561	2136	3697	42	2.69	66	3.09	108	2.92	15	24	39	1	2	3
10	Thiruvalla	2283	2102	4385	275	12.04	253	12.04	528	12.04	15	13	28	1	4	5
11	Changanachery	958	972	1930	178	18.58	186	19.14	364	18.86	2		2	1	-	1
12	Kottayam	1890	1508	3398	92	4.87	36	2.38	128	3.76	5	6	11			
13	Palai	1378	1361	2739	86	6.24	92	6.78	178	3.36	6	4	10	2	1	3
14	Vaikom															
15	Muvattupuzha	1809	1618	3427	168	9.29	126	7.79	294	8.58	1	1	2			
16	Kochi Corporation	9689	9499	19188	5425	55.99	6425	67.63	11850	61.76	78	67	145	45	37	82
17	Aluva	2100	2000	4100	128	6.09	118	5.9	246	6.00	7	5	12	2	2	4



Table 5 - Contd.

Sl. No	Municipality/ Corporation	Live Births										Still Births					
		Total Events					Events to normal residents					Total Events			Events to normal residents		
		Male	Female	Total	Male	%	Female	%	Total	%	Male	Female	Total	Male	Female	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
18	Paravur	1838	1806	3644	102	5.55	106	5.86	208	5.70	3	6	9	-	-	-	
19	Perumbavoor	1274	1291	2565	108	8.48	116	9.11	224	8.79	7	4	11	-	-	-	
20	Irinjalakuda	948	939	1887	74	7.81	82	8.65	156	8.23	5	7	12	-	-	-	
21	Kodungallur	2521	2448	4969	119	4.72	105	4.29	224	4.50	9	8	17	-	-	-	
22	Guruvayour	189	177	366	12	6.35	11	5.82	23	6.08	-	-	-	-	-	-	
23	Thrissur																
24	Chalakkudy	1959	1848	3807	199	10.16	236	12.7	435	11.43	11	14	25	1	3	4	
25	Kunnamkulam	2250	2123	4373	194	8.62	222	10.45	416	9.55	7	9	16	-	2	2	
26	Palakkad	6894	6661	13555	639	9.27	606	8.79	1243	9.02	39	24	63	11	6	17	
27	Chittoor-Thathamangalam	138	153	291	9	6.52	13	8.49	22	7.54	-	-	-	-	-	-	
28	Thirur	4236	4054	8290							19	11	30	-	-	-	
29	Malappuram	3857	3468	7325	249	6.46	188	5.42	437	5.93	38	34	72	-	-	-	
30	Kozhikode Corporation	19940	18855	38795	4729	23.72	4194	22.24	8923	22.98	333	332	665	103	132	235	
31	Vadakara	1743	1729	3472	259	14.86	285	16.48	544	15.67	10	8	18	4	3	7	
32	Thalassery	5736	5406	11142	1845	32.16	1659	31.16	3504	31.60	38	36	74	4	5	9	
33	Kannur	2833	2892	5725	169	5.96	203	7.01	372	6.48	20	15	35	2	2	4	
34	Kasaragod	3912	4088	8000	392	10.02	364	8.90	756	9.46	55	46	101	3	4	7	

Table 5 - Contd.

Sl. No	Municipality/ Corporation	Infant Death						Other Deaths						Total Death										
		Total Events			Events to normal residents			Total Events			Events to normal residents			Total Events			Events to normal residents							
		Male	Fem ale	Tot al	Ma le	Fem ale	Tot al	Ma le	Fem ale	Tot al	Ma le	Fem ale	Tot al	Ma le	Fem ale	Tot al	Ma le	Fem ale	Tot al					
1	Neyyattinkara	3	1	4	2	-	2	284	208	492	140	103	243	287	209	496	142	103	245	49.47	49.28	245	49.40	
2	Thiruvananthapuram	349	318	667				4693	4853	9546				5042	5184	10226								
3	Attungal	-	-	-	-	-	-	110	92	202	66	51	117	110	92	202	66	60.00	51	55.43	117	57.92		
4	Kollam	62	59	121	16	14	30	1785	1018	2803	912	611	1523	1847	1077	2924	928	50.24	625	58.03	1553	53.11		
5	Punalur																							
6	Kayamkulam	3	3	6	1	1	2	229	169	398	148	140	288	232	172	404	149	64.22	141	81.97	290	71.88		
7	Mavelikara	13	10	23	2	4	6	359	219	578	94	93	187	372	229	601	96	25.81	97	42.36	193	32.11		
8	Alappuzha	123	75	198	28	8	36	1379	834	2213	638	388	1026	1502	909	2411	666	44.34	396	43.56	1062	44.05		
9	Cherthala	4	3	7				273	336	609	28	24	52	277	339	616	28	10.11	24	7.08	52	8.44		
10	Thiruvalla	24	17	41	2	1	3	528	366	894	180	131	311	552	383	935	182	32.97	132	34.46	314	33.58		
11	Ghanganacherry	3	37	40				180	107	187	127	83	210	183	110	293	127	69.40	83	75.45	210	71.67		
12	Kottayam	-	-	-	-	-	-	336	312	648	7	14	21	336	312	648	7	2.08	14	4.49	21	3.24		
13	Palai	4	5	9	1	3	4	167	155	322	67	59	126	171	160	331	68	39.77	62	38.75	130	39.27		
14	Vaikom																							
15	Muvattupuzha	4	5	9	1	3	4	234	139	373	59	43	102	238	144	382	60	25.21	46	31.94	106	27.75		
16	Kochi Corporation	198	182	380	160	110	270	3582	3514	7096	195	187	3831	3780	3698	7478	211	55.93	1989	53.79	4103	54.87		
17	Aluva	1	2	3	-	1	1	279	131	410	64	42	106	280	133	413	64	22.86	43	32.33	107	25.90		

Sl. No	Infant Death										Other Deaths										Total Death																					
	Total Events					Events to normal residents					Total Events					Events to normal residents					Total Events					Events to normal residents																
	Male	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total	Ma le	Fem ale	Total			
18	1	1	2				323	230	553	43	25	68	324	231	555	43	13.27	25	10.82	68																						
19	10	6	16	1	2	3	189	109	298	54	39	93	199	115	314	55	27.64	41	35.65	96																						
20	2	2	4	1	1	2	149	99	248	79	69	148	151	101	252	79	52.32	69	68.32	148																						
21	3	5	8	2	-	2	250	193	443	66	51	117	253	198	451	66	26.09	51	25.76	117																						
22	13	9	22		2	2	306	190	496	135	111	246	319	199	518	135	42.32	113	56.78	248																						
23																																										
24							63	69	132	19	25	44	63	69	132	19	30.16	25	36.23	44																						
25	24	6	30	6	-	6	301	181	482	18	122	308	325	187	512	192	59.08	122	65.24	314																						
26	67	104	171	13	21	34	1154	636	1790	31	232	550	1221	740	1961	331	27.10	253	34.19	584																						
27							127	107	234	67	67	134	127	107	234	67	52.76	67	62.62	134																						
28	25	26	51				282	220	502				307	246	553																											
29	24	41	65	4	2	6	263	154	417	13	106	242	287	195	487	136	45.79	106	54.36	242																						
30	477	319	796	186	115	30	4770	3178	7948	16	1015	2672	5247	3497	8747	1843	35.12	1130	32.31	2973																						
31	9	6	15	3	5	8	515	336	851	23	148	379	524	342	866	234	44.66	153	44.74	387																						
32	64	37	101	6	5	11	992	630	1622	26	225	493	1056	667	1723	274	25.95	230	34.48	504																						
33	46	39	85	5	6	11	356	296	652	78	83	161	402	335	737	83	20.65	89	26.57	172																						
34	21	16	37	7	6	13	279	232	511	96	82	178	300	248	548	96	32.00	82	33.06	178																						

Table 6 - Deaths according to causes 2002

Sl. No	Municipality/ Corporation	Suicide	Accident	Pneumonia	B.P	T.B	Diabetes	Aids	Tetanus	Dysentery & Diarrhea	Respiratory Diseases	Enteric fever	Diphtheria	Cancer	Gastro Enteritis	Heart Failure	Pulmonary Diseases	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Neyyattinkkara		10							18-	56			82		28-		303	497
	Thiruvananthapuram																		10226
1.	Attingal						11							18		97		76	202
2.	Kollam																		
3.	Punalur																		2924
4.	Kayamkulam																		
5.	Mavelikara																		404
6.	Alappuzha																		601
7.	Cherthala												3	367			277	1764	2411
8.	Thiruvalla	28	24				43			12	38	21		12	4	185	39	305	616
9.	Changanacheri					12					42	21		42		27	19	130	293
10.	Kottayam																		
11.	Palai										84	13		26				622	648
12.	Vaikom					11								29		38	21	146	331
13.	Muvattupuzha									1				9		23		238	282
14.	Kochi Corpora.		53		18	126	14	7	5							211		171	382
15.	Aluva				5		9			37	50	32		150		1988	25	4973	7478
														50		31	58	260	413



Table 6 (Contd...)

Sl. No	Municipality/ Corporation	Suicide	Accident	Pneumonia	BP	TB	Diabetes	Aids	Tetanus	Dysentery & Diarrhea	Respiratory Diseases	Enteric fever	Diphtheria	Cancer	Gastro Enteritis	Heart Failure	Pulmonary Diseases	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	Paravur							2						48		364		141	555
19	Perumbavoor									3				45		110	14	142	314
20	Irinjalakuda																		
21	Kodungallur																		252
22	Chalakudy	9	13							4	128			32		43	22	267	451
23	Thrissur																		518
24	Guruvayoor	14	3		3		3							6		48		58	132
25	Kunnankulam	3	9		10	10					42			25		158		265	512
26	Palakkad																		
27	Chittoor-Thathamangalam																	1961	1961
28	Thirur																		234
29	Malappuram																		553
30	Kozhikode Corpo.	262	367	116	214	491		13	5			1	1	714		1115	94	5354	8747
31	Vadakara																		
32	Thalassery																		866
33	Kannur																		1723
34	Kasaragod					52					9			23		116		598	737
35	Total	316	469	126	240	702	77	22	10	75	449	88	4	1809	4	4766	768	18758	47233

Table 7 - Results of Spot Check 2002

Sl. No	Municipality/ Corporation	No. of wards selected	Total no. of House holds	No. of House holds visited	No. of events detected to normal residents											
					Live Births			Infant Deaths			Other deaths					
					Enume rated	Regis- tered	N.R	occurred outside	Enume rated	Regis- tered	N.R	occurred outside	Enume rated	Regis- tered	N.R	occurred outside
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.	Neyyattinkara	15	8983	7338	414	58	-	356	1	-	-	1	166	122	-	44
2.	Thiruvananthapuram	15	33462	22793	660	630		30					185	181	4	
3.	Attingal	15	5463	5463	194	56	-	138	1-	-	-	1-	62	37	-	25
4.	Kollam	15	22903	17964	1024	903		121	4	4			351	306	1	44
5.	Punalur	15														
6.	Kayamkulam	15	5721	5721	376	274		102	3			3	134	88	19	27
7.	Mavelikara	15	4443	4443	294	205		89	4	2	1	1	119	97	4	18
8.	Alappuzha	18	17796	17796	814	690		124	1	1			362	322	8	32
9.	Cherthala	15	7030	5407	86	61		25				-	25	20	1-	4
10.	Thiruvalla	15	6088	6088	163	103		60				-	93	72	-	21
11.	Changanacherry	-15	7762	5331	242	73		169	2	1	-	1	101	65	3	33
12.	Kottayam	15	7134	7134	132	89		43				-	89	34	-	55
13.	Palai	15	4962	3936	191	100		91	2	1	-	1-	123	91	1	31
14.	Vaikom	15	6249	4447	123	27		96					63	38	-	25
15.	Muvattupuzha	15	4067	4067	209	132		77	2		-	2	87	67	4	16
16.	Kochi Corporation	15	26322	24758	914	782		132			-	-	422	417	-	5
17.	Aluva	15	4613	3613	132	55		77			-	-	77	39	1-	37

Table 7 (Contd.....)

Sl. No.	Municipality/ Corporation	No. of wards selected	Total no. of House holds	No. of House holds visited	No. of events detected to normal residents														
					Live Births					Infant Deaths					Other deaths				
					Enume rated	Regi- stered	N.R	occurred outside	Enume rated	Regi- stered	N.R	occurred outside	Enume rated	Regis- tered	N.R	occurred outside	Enume rated	Regis- tered	N.R
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
18.	Paravur	15	4852	4852	208	103	105	105	10	11	12	13	14	15	16	17			
19.	Perumbavoor	15	4386	4386	245	96	149	149					68	60	-	8			
20.	Irinjalakuda	15	4372	4372	190	55	135	135					86	65	3	18			
21.	Kodungallur	15	4543	4543	224	174	50	50					100	60	-	40			
22.	Chalakudy	15	6158	6158	333	202	131	131	3	-	2	1	117	86	-	31			
23.	Thrissur	15											116	85	5	26			
24.	Guruvayoor	15	3269	3269	182	17	165	165	2	-	-	2	66	33	5	28			
25.	Kunnamkulam	15	5609	5609	291	126	165	165	1	1	-	-	137	116	-	21			
26.	Palakkad	15	7247	7247	707	639	68	68	9	9	-	-	192	162	5	25			
27.	Chittoor- Thathamangalam	15	4661	4661	174	18	186	186	-	-	-	-	110	84	-	26			
28.	Thirur	15	4507	4507	523	357	166	166					96	73	4	19			
29.	Malappuram	15	6933	6933	437	372	65	65					242	236	-	6			
30.	Kozhikode Corpo.	15	19687	19687	950	832	118	118					332	293	23	16			
31.	Vadakara	15	4753	4753	335	100	235	235	2		1	1	125	92	7	26			
32.	Thalassery	15	5455	5455	308	281	27	27					135	129	1	5			
33.	Kannur	15	4850	3134	64	29	35	35					6	-	-	6			
34.	Kasaragod	15	5093	4076	184	166	18	18					58	52	-	6			

Table 8 - Under Registration and Occurrence of outside events

Sl. No	Municipality/ Corporation	% Of under registration		% of outside registration	
		Births	Deaths	Births	Deaths
1	2	3	4	5	6
1	Neyyattinkara	-	-	85.29	28.95
2	Thiruvananthapuram	-	2.16	4.54	
3	Attingal	-	-	71.13	41.27
4	Kollam	-	0.003	11.82	12.39
5	Punalur	-	-	-	-
6	Kayamkulam	-	17.76	27.13	21.90
7	Mavelikara	-	4.81	30.27	15.45
8	Alappuzha	-	2.48	15.23	8.82
9	Cherthala	-	4.76	29.07	16
10	Thiruvalla	-	-	36.81	22.58
11	Changanacherry	-	4.35	69.83	33.01
12	Kottayam	-	-	32.58	61.80
13	Palai	-	1.09	47.6	25.6
14	Vaikom	-	-	78.05	39.69
15	Muvattupuzha	-	5.6	36.84	20.23
16	Kochi Corporation	-	-	14.44	1.18
17	Aluva	-	2.5	58.30	48.05
18	N.Paravur	-	-	50.48	11.76
19	Perumbavoor	-	4.41	60.81	20.43
20	Irrinjalakuda	-	-	71.05	40
21	Kodungallur	-	-	22.32	26.50
22	Chalakydy	-	7.61	39.34	22.69
23	Thrissur	-	-	-	-
24	Guruvayoor	-	13.16	90.66	44.12
25	Kunnamkulam	-	-	56.70	15.20
26	Palakkad	-	2.84	9.62	12.44
27	Chittoor- Thathamangalam	-	-	89.66	23.64
28	Thirur	-	-	-	-
29	Malappuram	-	-	14.8	2.48
30	Kozhikode Corp.	-	7.28	12.42	4.82
31	Vadakara	-	8	70.15	21.60
32	Thalasserry	-	0.77	8.77	3.70
33	Kannur	-	-	54.70	85.71
34	Kasaragod	-	-	14.26	3.36



**Table 9 - Registered Vital Rates and Adjusted Residential Vital rates 2002**

Sl. No.	Municipality/ Corporation	Registered vital rates		Adjusted residential vital rates	
		Births	Deaths	Births	Deaths
1	2	3	4	5	6
1	Neyyattinkara	5.44	3.48	38.82	4.89
2	Thiruvananthapuram *				
3	Attingal				
4	Kollam	4.21	3.23	14.58	5.50
5	Punalur	15.63	4.25	17.72	4.85
6	Kayamkulam				
7	Mavelikara	10.21	4.22	14.1	5.40
8	Alappuzha	11.10	6.78	15.42	8.01
9	Cherthala	14.15	6.14	16.60	6.73
10	Thiruvalla	2.38	1.15	3.36	1.37
11	Changanacherry	9.24	5.49	14.62	7.09
12	Kottayam	6.94	4.00	23	5.97
13	Palai	2.08	0.34	3.08	0.89
14	Vaikom	7.78	5.69	14.84	7.64
15	Muvattupuzha	0.11	0.16	0.50	0.27
16	Kochi Corporation	9.98	3.60	15.80	4.51
17	Aluva	18.46	6.84	21.57	6.92
18	Paravur	10.07	4.39	24.15	8.45
19	Perumbavoor	6.85	2.24	13.83	2.54
20	Irinjalakuda	8.35	3.58	21.31	4.53
21	Kodungalur	5.16	5.09	16.22	6.60
22	Chalakkudy	6.62	3.46	8.52	4.71
23	Thrissur	8.91	5.08	14.68	6.57
24	Guruvayoor				
25	Kunnamkulam	1.08	2.06	11.56	3.69
26	Palakkad	7.98	6.02	18.42	7.10
27	Chittoor-Thathamangalam	9.43	4.43	10.38	5.05
28	Thirur *	0.68	4.15	6.58	5.43
29	Malappuram				
30	Kozhikode Corp.	7.31	4.05	8.59	4.15
31	Vadakara	20.33	6.78	23.21	7.12
32	Thalasserry	7.13	5.07	23.89	6.47
33	Kannur	34.70	5.78	38.03	6.00
34	Kasaragod	5.77	2.68	12.94	18.95
		11.33	2.67	13.21	2.76

\*Due to the nonavailability of events to normal residents, the figures could not be worked out

APPENDIX

Method of calculation of adjusted residential vital rates

Residential vital rates can broadly be defined as the rate of occurrence of vital events among the normal residents of an area in a year. In order to calculate the percentage of under registration, the events occurring among persons coming to the town/city to avail themselves of better medical facilities are excluded and those of normal residents who are going outside the town are included.

*Number of events occurred to normal residents inside the town but not registered x 100*

1. Percentage of under registration  $\frac{\text{Number of events among occurred to normal residents inside the town registered and not registered}}{\text{Number of events among occurred to normal residents inside the town registered and not registered}} \times 100$
  
2. Percentage of events occurred outside the town to normal residents  $\frac{\text{Number of events occurred among normal residents outside the town registered and unregistered} \times 100}{\text{Number of events enumerated and occurred among normal residents inside and outside and outside the town}}$
  
3. Registered birth/death rate to normal residents  $\frac{\text{Total no of birth/death occurred to normal residents and registered in the town} \times 1000}{\text{Mid year population of the town}}$
  
4. Residential birth/death rate to normal residents occurred inside the town (weighted for under registration)  $\frac{\text{Registered birth/death rate} \times 100}{(100 - \text{percentage of under registration})}$
  
5. Final Residential birth/death rate (weighted for outside events)  $\frac{\text{Residential birth/death rate to normal residents occurred inside the town (weighted for under registration)} \times 100}{(100 - \text{Percentage of events occurred outside the town to normal residents})}$

984

