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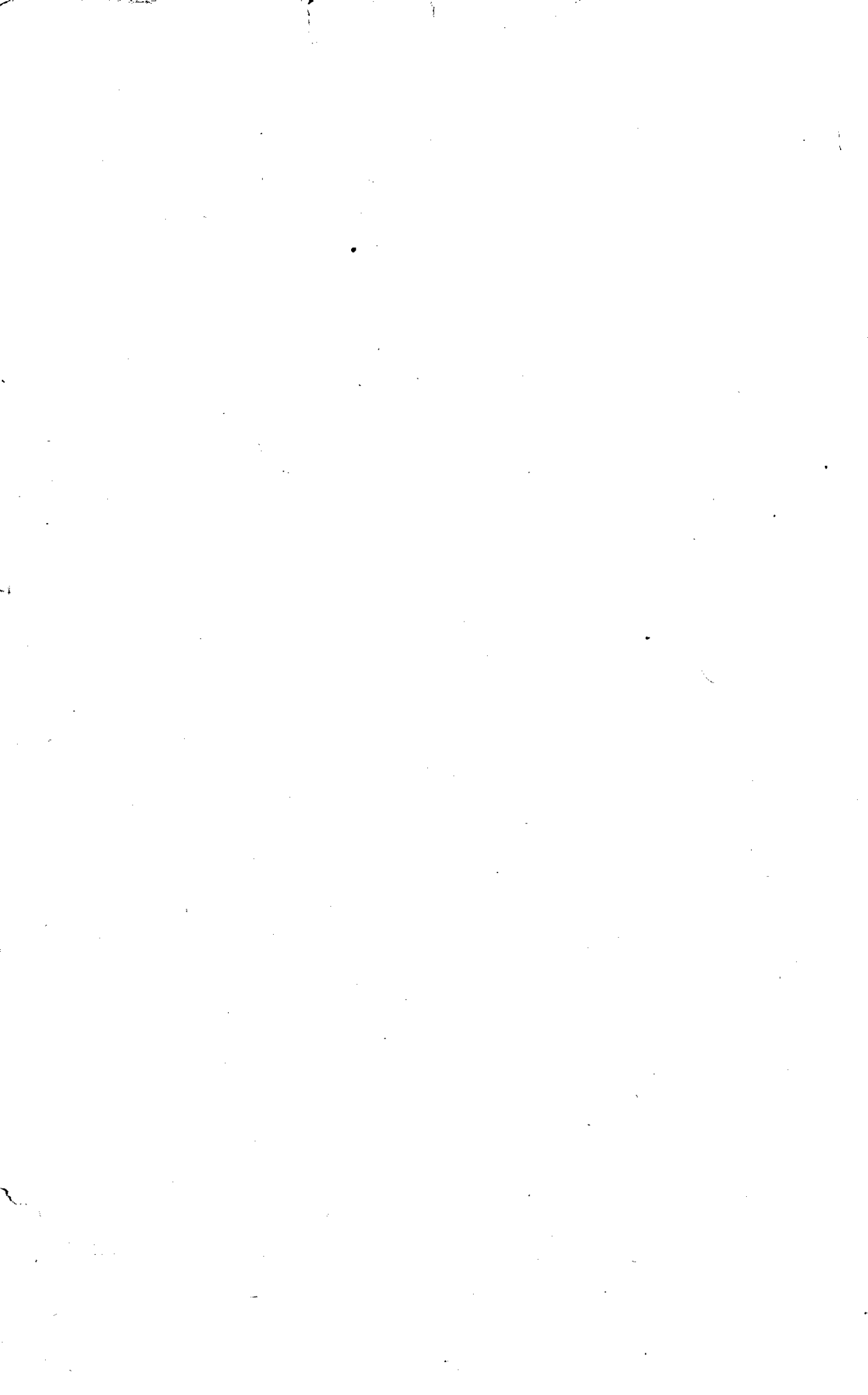
The characteristics of the population of Kerala
and the impact of the Family planning program

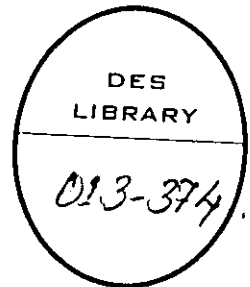
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TRIVANDRUM

1973





Paper No. 79

THE CHARACTERISTICS OF THE POPULATION OF KERALA AND
THE IMPACT OF THE FAMILY PLANNING PROGRAMME

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THE CHARACTERISTICS OF THE POPULATION OF KERALA
AND THE IMPACT OF THE FAMILY PLANNING

PROGRAMME

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The characteristics of the Population of Kerala
and the impact of the Family Planning Programme*

1. Introduction

Kerala has been a land of human settlement from very early times. Blessed with an equable climate and fertile soil, the state has attracted settlers from other places, in the past. There has been a reversal of this trend occasionally but more so during the last four decades. This paper attempts, to trace the growth of population in the State, to analyse the changes in the distribution and characteristics of the population and to assess the impact of the Family Planning Programme, as far as data permit.

2. Population growth

(a) Area and population

Situated at the southwest corner of India, the State has an area of 38864 Sq.k.m. In the following table the area, population and density of the different states in India are given for purposes of Comparison.

Table 2.1

Area and Population of the States of India
as per 1971 Census

| S1. No. | Name of the State | Area in Sq. K.M | Rank in area | Population (in millions) | Rank in population | Density of population (No. per Sq. K.M) | Rank in density |
|---------|----------------------------|-----------------|--------------|--------------------------|--------------------|---|-----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. | Andrapradesh | 276814 | 5 | 43.50 | 5 | 157 | 9 |
| 2. | Assam | 99610 | 12 | 14.96 | 13 | 150 | 11 |
| 3. | Bihar | 173876 | 9 | 56.35 | 2 | 324 | 3 |
| 4. | Gujarat | 195984 | 7 | 26.70 | 9 | 136 | 14 |
| 5. | Hariyana | 44222 | 16 | 10.04 | 15 | 227 | 17 |
| 6. | Himachalpradesh | 55673 | 14 | 3.46 | 17 | 62 | 17 |
| 7. | Jammu & Kashmir Kashmir | 222236 | 6 | 4.62 | 16 | Na | .. |
| 8. | Kerala | 38864 | 17 | 21.35 | 12 | 549 | 1 |
| 9. | Madhya pradesh | 442841 | 11 | 41.65 | 6 | 94 | 15 |
| 10. | Maharashtra | 307762 | 3 | 50.41 | 3 | 164 | 8 |
| 11. | Manipur | 22356 | 19 | 1.07 | 19 | 48 | 18 |
| 12. | Maghalaya | 22439 | 18 | 1.01 | 20 | 45 | 19 |
| 13. | Mysore | 191773 | 8 | 29.30 | 8 | 153 | 10 |
| 14. | Nagaland | 16527 | 20 | 0.52 | 21 | 31 | 20 |
| 15. | Orissa | 155782 | 10 | 21.95 | 11 | 141 | 13 |
| 16. | Punjab | 50362 | 15 | 13.55 | 14 | 269 | 6 |
| 17. | Rajasthan | 342214 | 2 | 25.77 | 10 | 75 | 16 |
| 18. | Tamil Nadu | 130069 | 11 | 41.20 | 7 | 317 | 4 |
| 19. | Tripura | 10477 | 21 | 1.56 | 18 | 149 | 12 |

Acknowledgements: This paper was prepared by Dr. R. S. Kurup, Deputy Director & Sri. P. S. Gopinathan Nair, Assistant Director of the Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------|--------|----|--------|----|-----|----|---|
| 20. Uttarpradesh | 294413 | 4 | 88.34 | 1 | 300 | 5 | |
| 21. West Bengal | 87853 | 13 | 44.31 | 4 | 504 | 2 | |
| INDIA | .. | .. | 547.95 | .. | 178 | .. | |

It is evident from the table that though Kerala is 12th in rank among the States in the matter of population size, she ranks 1st in density. Hence, the pressure of population is greatest in Kerala. Though the State forms only 1.27% of the Indian Union in area, the Population in the State 4.8% of India's population.

(b) Growth in Population size and density

The pace of population growth in the early periods was extremely slow from about 30 lakhs during the beginning of the 17th century to 45 lakhs by 1850, but since the turn of the 20th century, the population of the State has been growing steadily. The sustained growth within a finite area has resulted in ever increasing density. These may be seen from the following table.

Table 2.2
Growth of Population in Kerala

| <u>Year</u> | <u>Population in lakhs</u> | <u>Density per Sq. K.M.</u> |
|-------------|----------------------------|-----------------------------|
| 1901 | 69.96 | 165 |
| 1911 | 71.48 | 184 |
| 1921 | 78.02 | 201 |
| 1931 | 95.07 | 245 |
| 1941 | 110.32 | 284 |
| 1951 | 135.49 | 349 |
| 1961 | 169.04 | 435 |
| 1971 | 213.47 | 549 |
| ---- | ----- | ----- |

The staggering difference in the absolute growth of numbers, during the earlier decades of this century as compared to the latter decades, may be seen from the above table. During the thirty year period 1901-1931, the addition to the population was 31.01 lakhs where as in the next thirty year period the corresponding figure was 73.9 lakhs. In the last one decade (1961-71) alone, 44.5 lakhs of persons have been added to the population.

(c) Growth Rates Apart from the absolute growth in numbers, the decennial percentage variation and the geometric rate of growth, will reveal the pattern of growth of the population. These relevant figures for Kerala, are given below, along with those relating to India as a whole for purpose of comparison.

Table 2.3
Rates of Growth of Population of
Kerala & India - 1901 to 1971

| KERALA | | | INDIA | |
|---------|-----------------------|-----------------------------------|-----------------------|-----------------------------------|
| Decade | Decennial variation % | Annual Geometric rate of growth % | Decennial variation % | Annual geometric rate of growth % |
| 1901-11 | +11.75 | 1.9 | +5.73 | 0.65 |
| 1911-21 | +9.16 | 0.90 | -0.30 | -0.03 |
| 1921-31 | +21.85 | 1.98 | +11.00 | 1.305 |
| 1931-41 | +16.04 | 1.50 | +14.23 | 1.34 |
| 1941-51 | +22.82 | 2.08 | +13.31 | 1.26 |
| 1951-61 | +24.76 | 2.24 | +21.64 | 1.693 |
| 1961-71 | +26.29 | 2.26 | +24.80 | 2.32 |

It may be seen from the above table that except for two breaks during the decades 1911-21 and 1931-41, the populations have followed an increasing trend since 1901.

On a comparison of the decennial growth rates among the states it is seen that 12 States have higher rates than Kerala - with the North Eastern States recording rates ranging from 30 to 40%. But the rates of growth in Kerala have always been higher than that of the Indian Union - so much so that during the seventy year period from 1901-1971, while India's population increased only by 130%, Kerala's Population increased by 233.6%. The disproportionate contribution by the State towards addition to the population of India during the 20th century is evident.

There is variation among the Districts in the matter of growth rates. The northern Districts show a much higher rate than the southern districts especially during 1961-71. The rates of growth of the various districts are given in the following table.

Table 2.4
Growth rates of Population in the Districts 1961-71

| Name of District | Decennial variation % | Annual Geometric growth rate % |
|------------------|-----------------------|--------------------------------|
| --- | ----- | ----- |
| Cannanore | 32.85 | 2.9 |
| Kozhikode | 32.60 | 2.8 |
| Malappuram | 33.80 | 2.9 |
| Palghat | 23.06 | 2.1 |
| Trichur | 26.09 | 2.3 |
| Ernakulam | 27.69 | 2.4 |
| Kottayam | 20.78 | 1.8 |
| Alleppey | 17.73 | 1.6 |
| Quilon | 23.93 | 2.2 |
| Trivandrum | 26.03 | 2.3 |
| --- | --- | --- |

How this growing population is distributed between Rural and Urban areas and among the various administrative and natural divisions of the State, may be seen in the following Section.

3. Distribution of Population.

(a) Rural - Urban distribution

The rural-urban distribution of the population of a State/Country and the changes therein over time are important indicators of the shifts in population resulting from socio-economic changes. Though the predominance of rural population continues here the relative changes are noteworthy.

Table 3.1

Rural & Urban Population in Kerala (1901-71)

| Year | Rural Population (in lakhs) | Percentage | Urban Population (in lakhs) | Percentage |
|------|--------------------------------|------------|--------------------------------|------------|
| 1901 | 59.42 | 92.9 | 4.54 | 7.1 |
| 1911 | 66.23 | 92.7 | 6.25 | 7.3 |
| 1921 | 71.56 | 91.7 | 6.46 | 8.3 |
| 1931 | 86.40 | 90.9 | 8.67 | 9.1 |
| 1941 | 99.03 | 89.8 | 11.28 | 10.2 |
| 1951 | 119.58 | 88.3 | 15.91 | 11.7 |
| 1961 | 143.50 | 84.9 | 25.54 | 15.1 |
| 1971 | 178.81 | 83.72 | 34.66 | 16.28 |

(b) Variation in Density among the Districts

Besides the rural-urban distribution, the density of population is indicative of the extent of the pressure of population on land. But the over all density, high as it is for Kerala, conceals the uneven distribution of population in the various Districts, Taluks and Villages. The density in the various districts according to 1971 census, (along with the corresponding figures for 1961, for purposes of comparison) is given in the following table.

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Table 3.2

Density of Population (per Sq. K.M) in
the Districts of Kerala

| District | Population in lakhs 1971 | Density per Sq.M.M.1971 | Density per Sq. K.M. 1961 |
|--------------|--------------------------|-------------------------|---------------------------|
| Cannanore | 23.65 | 415 | 312 |
| Kozhikode | 21.06 | 565 | 426 |
| Malappuram | 18.56 | 510 | 381 |
| Palghat | 16.85 | 383 | 311 |
| Trichur | 21.29 | 702 | 557 |
| Ernakulam | 23.83 | 729 | 571 |
| Kottayam | 20.85 | 326 | 270 |
| Alleppey | 21.26 | 1128 | 958 |
| Quilon | 24.13 | 522 | 421 |
| Trivandrum | 21.99 | 1003 | 796 |
| Kerala State | 213.47 | 549 | 435 |

It may be seen that the density of Alleppey District is more than double that of the State. Five Districts have density, more than that of the State.

(C) Distribution among natural Regions and Taluks

There is striking difference, in the matter of concentration of population, among the three natural divisions of the State. The highland consisting of 48% of the State's area accommodates only 15% of the population, while the lowland which accounts for only 10.2% of the area, accommodates 25.8% of the population. The midland consisting of 41.8% of the area is the habitat of 59% population. The variation in density is also considerable - with just 172 persons per sq. K.M. in the highland, 778 in the midland and 1385 in the lowland.

There is considerable variation in density among the Taluks which is evident from the following Table.

Table 3.3

Distribution of Taluks according to Density

| Density range | No. of taluks | Percentage to total number | Percentage of population |
|------------------------------|---------------|----------------------------|--------------------------|
| 1. Less than 250 per Sq.K.M. | 8 | 14.29 | 8.32 |
| 2. 251 to 500 " | 11 | 19.64 | 20.12 |
| 3. 501 to 750 " | 11 | 19.64 | 19.71 |
| 4. 751 to 1000 " | 9 | 16.07 | 21.37 |
| 5. 1001 to 1250 " | 7 | 12.50 | 11.13 |
| 6. 1251 to 1500 " | 3 | 5.36 | 4.90 |
| 7. Above 1500 " | 7 | 12.50 | 14.45 |
| State | 56 | 100.00 | 100.00 |

The distribution of Taluks according to population size is given below.

Table 3.4
Distribution of Taluks according to Population size

| Population Range | Taluks - 1971 | | | Taluks - 1961 | | |
|-------------------------------|---------------|---------------------|-----------------------------------|---------------|---------------------|-----------------------------------|
| | No. | Percentage of total | Percentage of Population to total | No. | Percentage of total | Percentage of Population to total |
| Below 1 lakh | .. | .. | .. | 2 | 4.0 | 1.1 |
| Above 1 lakh & below 2 lakhs | 7 | 12.5 | 5.0 | 8 | 14.0 | 7.7 |
| Above 2 lakhs & below 3 lakhs | 12 | 21.4 | 15.0 | 16 | 30.0 | 23.8 |
| Above 3 " & " 4 " | 16 | 28.6 | 25.8 | 19 | 34.0 | 37.1 |
| " 4 " & " 5 " | 10 | 17.9 | 20.9 | 5 | 9.0 | 13.5 |
| " 5 " & " 6 " | 5 | 8.9 | 12.9 | 4 | 7.0 | 12.9 |
| Above 6 lakhs | 6 | 10.7 | 20.4 | 1 | 2.0 | 3.9 |
| Total | 56 | 100.0 | 100.0 | 55 | 100.0 | 100.0 |

The percentage of Taluks with population above 6 lakhs and in the range 4 to 5 lakhs has increased considerably as compared to 1961. The maximum number of Taluks are having population between 3 to 4 lakhs as was the case in 1961.

(d) Distribution of population in Villages

Coming down to the villages whose settlement pattern is quite different from the rest of India, it is seen that the villages are larger in population size. Their distribution according to population size shows that the large majority of them are those with population of 10000 and above, as may be seen from the following table.

Table 3.5

| <u>Population</u> | <u>No. of inhabited villages</u> | <u>Percentage</u> | <u>Corresponding % in 1961</u> |
|-------------------|----------------------------------|-------------------|--------------------------------|
| Less than 200 | 2 | 0.16 | 0.2 |
| 200 - 499 | 2 | 0.16 | 0.2 |
| 500 - 999 | 2 | 0.16 | 1.1 |
| 1000 - 1999 | 16 | 1.26 | 3.7 |
| 2000 - 4999 | 122 | 9.62 | 25.2 |
| 5000 - 9999 | 316 | 24.92 | 37.2 |
| 10000 & above | 808 | 63.72 | 32.4 |
| Total | 1268* | 100.00 | 100.00 |

*Does not include 58 Revenue villages which lie wholly within the towns.

Of the 32 towns, 32 are municipal towns (including 3-corporations and 26-Municipalities) and the rest are non-municipal towns.

It is note-worthy that, of the 178.81 lakhs population who live in 1268 villages, 83.5% live in villages of population ten thousand and above. The villages are further sub-divided into Karas/Muris/ Desoms of which there are 5972.

(e) Distribution in Towns

With regard to the towns in Kerala, there are 88 of them as per 1971 and their distribution according to population size is as follows:

Table 3.6

Distribution of towns according to population size

| Population range | No. of Towns | % to total number | Populat- ion in lakhs | % to urban population |
|------------------|--------------|-------------------|-----------------------|-----------------------|
| Below 5000 | 2 | 2.3 | 0.09 | 0.3 |
| 5000 - 9999 | 9 | 10.2 | 0.74 | 2.1 |
| 10000 -19999 | 25 | 28.4 | 3.51 | 10.1 |
| 20000 -49999 | 40 | 45.4 | 11.01 | 31.8 |
| 50000 -99999 | 7 | 8.0 | 4.64 | 13.4 |
| 1 lakh & above | 5 | 5.7 | 14.67 | 42.3 |
| TOTAL | 88 | 100.0 | 34.66 | 100.0 |

Of the 88 towns, 32 are Municipal towns (including 3 Corporations and 29 Municipalities) and the rest are non-municipal towns.

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42.3% of the urban population live in towns with population 1 lakh and above as against 27% in 1961. If we consider towns with population above 20000, it is found that 84.5% of the urban population are living in such towns as against 75% in 1961.

4. Composition of Population

Quite unlike India as a whole and most other States of the Indian Union, the number of females in Kerala exceed the number of males. The sex ratio, of the State from 1901, is given below.

Table 4.1
Sex Ratio of Kerala

| <u>Year</u> | <u>No. of females per 1000 males</u> |
|-------------|--------------------------------------|
| 1901 | 1004 |
| 1911 | 1008 |
| 1921 | 1011 |
| 1931 | 1022 |
| 1941 | 1027 |
| 1951 | 1028 |
| 1961 | 1022 |
| 1971 | 1016 |
| ---- | ---- |

There is variation among the districts in the matter of sex ratio as may be seen from the following table.

Table 4.2
Sex ratio in the Districts of Kerala
1971

| <u>Name of District</u> | <u>No. of females per 1000 males</u> |
|-------------------------|--------------------------------------|
| Cannanore | 1017 |
| Kozhikode | 991 |
| Malappuram | 1041 |
| Palghat | 1056 |
| Trichur | 1081 |
| Ernakulam | 983 |
| Kottayam | 976 |
| Alleppey | 1028 |
| Quilon | 1001 |
| Trivandrum | 1008 |

(b) Age

As in the case of India and other developing countries which experience fast decline in death rates and have more or less unchanging birth rates, the age pyramid shows a wide base. According to the 1961 census age distribution, 41% of the population are in the age group 0-14 years, 55.7% in the age group of 15-64 years and 3.28% in the age group 65 years and above. The age data of 1971 census have not become available

contd...

and hence are not presented here.

(a) Marital Status

Similarly, the data on marital status distribution, which has the most significant effect on fertility, are not yet available from 1971 Census. The 1961 census results on this item had shown important differences, compared to India and other States. The average age at marriage of females in Kerala during 1951-60 stood at 18.55 years, the highest among the states - while it was 13 years for India. As per 1961 Census, 35.8% males and 36.6% females were married. In the young age groups the proportion of unmarried in Kerala was much higher. For example, among the females in the age group 15-24 years 43% were unmarried in Kerala while the corresponding percentage for India was only 10.

(d) Religion

As per the 1961 census 59.4% of the population were Hindus 21.1% Christians and 19.5% Muslims. The changes in the distribution by religion are revealed from the following table.

Table 4.3
Variation in the percentage distribution of population based on Religion

| Year | Percentage of | | | | Total Total |
|------|---------------|------------|---------|--------|-------------|
| | Hindus | Christians | Muslims | Others | |
| 1901 | 63.03 | 13.82 | 17.23 | 0.54 | 100.00 |
| 1911 | 66.63 | 15.41 | 17.68 | 0.23 | 100.00 |
| 1921 | 64.75 | 17.64 | 17.43 | 0.13 | 100.00 |
| 1931 | 63.34 | 19.52 | 17.08 | 0.06 | 100.00 |
| 1941 | 60.73 | 20.52 | 17.03 | 1.67 | 100.00 |
| 1951 | 61.59 | 20.85 | 17.33 | 0.03 | 100.00 |
| 1961 | 60.83 | 21.22 | 17.91 | 0.04 | 100.00 |
| 1971 | 59.41 | 21.95 | 19.50 | 0.04 | 100.00 |

The trend shows that the proportion of Hindus among the total population has been gradually declining while those of Christians and Muslims have been rising.

(3) Literacy

According to 1971 census, the literacy rate of the population of Kerala is 60% as against 29.5% for all India. It is note worthy that 54% of the females in Kerala are literate as against 18.7% in India as a whole. The progress attained in this respect may be seen from the following table.

Table 4.4

| Census Year | % of literate Pop. to total Population | % of literate males to total male population | % of literate females to total female population |
|-------------|--|--|--|
| 1941* | 48.1 | 58.1 | 36.0 |
| 1951** | 53.8 | 64.4 | 43.4 |
| 1961 | 46.85 | 54.97 | 38.90 |
| 1971 | 60.16 | 66.54 | 53.90 |

* Travancore State

** Travancore-Cochin State

made during the decade 1961-71 may be seen from below:

Table 4.5

| Name of District | Percentage of literacy | |
|------------------|------------------------|-------|
| | 1961 | 1971 |
| Cannanore | 41.29 | 54.84 |
| Kozhikode | 44.88 | 57.23 |
| Malappuram | 34.29 | 47.90 |
| Palghat | 33.69 | 46.69 |
| Trichur | 48.16 | 61.61 |
| Ernakulam | 50.53 | 65.29 |
| Kottayam | 56.56 | 67.72 |
| Alleppey | 56.90 | 70.44 |
| Quilon | 50.49 | 64.97 |
| Trivandrum | 45.30 | 62.54 |

To facilitate comparison, the figures on percentage of literates in the other States is shown below.

Table 4.6

Percentage of literates in the States according to 1971 census.

| Name of State | Percentage literates | | |
|----------------------|----------------------|-------|---------|
| | Total population | Males | Females |
| 1. Andhra Pradesh | 24.57 | 33.18 | 15.75 |
| 2. Assam | 28.72 | 37.19 | 19.27 |
| 3. Bihar | 19.94 | 30.64 | 8.72 |
| 4. Gujarat | 35.79 | 46.11 | 24.75 |
| 5. Hariyana | 26.89 | 37.29 | 14.89 |
| 6. Himachal Pradesh | 31.26 | 43.19 | 20.23 |
| 7. Jammu and Kashmir | 18.58 | 26.75 | 9.28 |
| 8. Kerala | 60.42 | 66.62 | 54.31 |
| 9. Madhya Pradesh | 22.14 | 32.70 | 10.92 |
| 10. Maharashtra | 39.18 | 51.04 | 26.43 |
| 11. Manipur | 32.91 | 46.04 | 19.53 |
| 12. Meghalaya | 29.49 | 34.12 | 24.56 |
| 13. Mysore | 31.52 | 41.62 | 20.97 |
| 14. Nagaland | 27.40 | 35.02 | 18.65 |
| 15. Orissa | 26.18 | 38.29 | 13.92 |
| 16. Punjab | 33.67 | 40.38 | 25.90 |
| 17. Rajasthan | 19.07 | 28.74 | 8.46 |
| 18. Tamil Nadu | 39.46 | 51.78 | 26.86 |
| 19. Tripura | 30.98 | 40.20 | 21.19 |
| 20. Uttar Pradesh | 21.77 | 31.50 | 10.70 |
| 21. West Bengal | 33.20 | 42.81 | 22.42 |
| INDIA | 29.46 | 39.45 | 18.72 |

(f) Occupation: The changes over time in the occupational composition of a population throw considerable light on the shifts taking place among the different sectors of the economy. Due to changes brought about in 1971, in the definition of worker and the grouping of industrial categories,

there is no strict comparability between the data for 1961 and 1971. Ignoring the slight changes brought about in 1971, the salient changes during the two decades 1951-61 and 1961-71 are as follows:

During the decade 1951-61 there is a decrease in the percentage of agricultural labourers but there is a reversal of this trend during the decade 1961-71. The slight decrease in the percentage of cultivators during the earlier decade is continued with increased acceleration during 1961-71. The significant increase noticed during 1961 (8.4%) in the percentage under "other services", has come down to 3.95% in 1971. In 1971, there is a decline in the percentage of population engaged in manufacturing (including household industry).

The percentage distribution of population by industrial category of workers and non-workers for the census years 1951, 1961 and 1971 are presented in the following table:

Table 4.7

Percentage distribution of population among industrial categories and workers - Kerala

| Percentage distribution of workers | 1951 | 1961 | 1971 |
|---|-------|-------|-------|
| 1. Cultivator | 7.50 | 7.0 | 5.2 |
| 2. Agricultural labourers | 8.2 | 5.8 | 8.9 |
| 3. Livestock, Forestry, Fishing Hunting and plantations, Richards & allied activities | 2.4 | 2.9 | 2.0 |
| 4. Mining and quarrying | .. | .. | 0.1 |
| 5. Manufacturing, processing servicing and repairs: | | | |
| (a) Household industry | .. | 2.9 | 1.3 |
| (b) Other than household industry | 6.1 | 3.1 | 3.3 |
| 6. Construction | 0.5 | 0.4 | 0.5 |
| 7. Trade and Commerce | 2.1 | 1.9 | 2.7 |
| 8. Transport, Storage and communication | 1.0 | 0.9 | 1.1 |
| 9. Other services | 4.5 | 8.4 | 4.0 |
| 10. Non-workers | 67.7 | 66.7 | 70.9 |
| Total | 100.0 | 100.0 | 100.0 |
| Total No. of workers (in lakhs) | 43.60 | 56.30 | 62.16 |

5. Household size:

According to 1971 census, the average number of persons per household in the State is 6.03. The corresponding figures for rural and urban areas are 5.95 and 6.39

respectively. If instead of household, the occupied houses are considered, the average number per occupied house for the State as a whole is 6.24 while it is 6.13 for rural and 6.91 for urban areas.

6. Fertility and Mortality:

Since the net effect of migration on population size of the State is not significant - net loss being only 2.3% of the 1961 population of the State - changes in the size and characteristics of the population are mainly the result of the interplay of the other two important factors of population change namely fertility and mortality. The available data on these two important factors shall be examined in the following section:

(a) Birth and Death rates: As the Civil registration of births and deaths is incomplete to a large extent, a better picture of the level and changes in fertility and mortality could be obtained from the measures derived from inter-censal estimates and the scheme of Sample Registration.

The following table gives the census estimates of birth and death rates and sample registration estimates.

Table 6.1
Birth and Death rates of Kerala

| Decade | Census estimates | | Year | Sample Registration (rural estimates) | |
|---------|------------------|------------|---------|---------------------------------------|------------|
| | Birth rate | Death rate | | Birth rate | Death rate |
| 1931-40 | 40.0 | 25.0 | 1965-66 | 37.9 | 10.1 |
| 1941-50 | 39.8 | 20.0 | 1966-67 | 37.2 | 10.4 |
| 1951-60 | 38.9 | 16.1 | 1967-68 | 35.4 | 10.1 |
| 1961-70 | NA | NA | 1969-70 | 33.5 | 9.2 |
| | | | 1970-71 | 31.9 | 9.2 |

NA - Not available

The relatively faster decline in death rate, which has reached a low level is evident from the above figures. It may be mentioned that the death rate of Kerala is the lowest among the Indian States.

(b) Other measures of fertility:

Since the birth rate does not indicate the real fertility differences among the different age-groups nor the extent of replacement, other measures of fertility have to be worked out. The following table shows the age-specific

fertility rates: - 14 -

Table 6.2

Age specific fertility Rates - Kerala

| Period | Source | Fertility rates of age groups | | | | | | |
|---------|-----------------------------|-------------------------------|-----------------|-----------------|-----------------|-----------------|---------------|-------|
| | | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 |
| 1959-60 | NSS 14th Round | 83.0 (305) | 227.00 (331) | 278.00 (347) | 193.00 (244) | 154.00 (199) | 45.00 (34) | .. |
| 1965-67 | Sample Registration (Rural) | 67.2 (236) | 226.20 (313) | 240.00 (285) | 199.10 (237) | 151.40 (186) | 57.40 (78) | .. |
| 1970 | do. | 56.04 | 191.36 | 225.14 | 166.21 | 128.73 | 43.23 | 8.22 |
| 1971 | do. | 48.40 | 210.78 | 223.27 | 173.20 | 116.69 | 42.96 | 6.85 |

NB - The figures in brackets indicate the age-specific marital fertility rate for the respective age groups. The figures given above show a noticeable reduction in fertility in the various age-groups over the years. However, the pattern remains the same - with the highest fertility in the age group 25-29, followed by the age group 20-24, while the lowest fertility is found in the age group 40-44. There is a marked reduction in fertility in the age group 15-19 which is perhaps, partly result of a lower marriage rate.

The gross reproduction rate (GRR) which indicates the number of female children that a mother would give birth to by the time she reaches the end of her reproductive age without facing mortality, is 2.49 for Kerala during 1951-60 as against 2.7 for India. The Gross reproduction rates for 1968 and 1969 based on Sample Registration (Rural) are 2.2 and 2.1* respectively. This rate has come down to 1.6 during 1971. The general fertility rate (No. of children born to women of age group 15-44 years) also shows a decline from 182 during 1951-60 to 140 in 1968 and to 129 in 1969 (the latter two rates are based on Sample Registration).

Thus, all the available estimates of the various measures of fertility show that a reduction of fertility has set in during the decade 1961-71.

The net reproduction rate which shows the extent of replacement of a female in the present generation by the number of females in the subsequent generation, after accounting for mortality also, remains between 1.6 and 1.7 during 1951 to 1971. This in spite of a reduction in GRR is evidently, the result of improvement in mortality also during the period.

*Measures of fertility and mortality in India - SRS Analytical series, No.2, 1972, Office of the Registrar General of India.

(c) Other measures of Mortality

As mortality affects each age group, differentiating the age specific mortality rates give a better picture of the effect of mortality on a population. The available data on age specific death rates estimated from Sample Registration are given below:

Table 6.3
Age specific Death Rates (S.R. estimates-Rural)

| Age Group | | 1970 | 1971 |
|-----------|----|-------|-------|
| Below 1 | .. | 62.2 | 70.4 |
| 1 - 4 | .. | 10.9 | 13.1 |
| 5 - 9 | .. | 3.1 | 2.4 |
| 10 -14 | .. | 0.8 | 1.1 |
| 15 -19 | .. | 0.8 | 1.6 |
| 20 -24 | .. | 2.4 | 2.1 |
| 25 -29 | .. | 3.6 | 1.8 |
| 30 -34 | .. | 4.7 | 3.8 |
| 35 -39 | .. | 6.3 | 4.0 |
| 40 -44 | .. | 4.5 | 5.1 |
| 45 -49 | .. | 7.0 | 7.2 |
| 50 -54 | .. | 11.4 | 8.5 |
| 55 -59 | .. | 17.3 | 15.5 |
| 60 -64 | .. | 24.9 | 23.1 |
| 65 -69 | .. | 39.0 | 43.6 |
| 70 + | .. | 124.6 | 102.1 |

The above data conform to the usual U pattern of high death rate before the age one, falling steeply upto age 10-14 and then slowly rising, until very high rates are reached for the advancing years of 65 and above.

The net differential impact of mortality on various age groups is reflected on the composite index namely expectation of life at birth and at each age. This is provided by the life table. The values of expectation of life at birth for the available periods, with source is given in the following table:

Table 6.4
Expectation of life at birth

| Year | Source of data | Expectation of life at birth | | | |
|---------|---------------------------------|------------------------------|-------|---------|-------|
| | | Males | | Females | |
| | | Kerala | India | Kerala | India |
| 1931-40 | Census | 33.2 | 32.1 | 35.1 | 31.4 |
| 1941-50 | " | 39.9 | 32.5 | 42.3 | 31.7 |
| 1951-60 | " | 46.2 | 41.9 | 50.0 | 40.6 |
| 1957-58 | NSS (provl.) for rural areas | 47.9 | 45.2 | 47.2 | 46.6 |
| 1969 | S.R. (Rural) | NA | *48.1 | NA | *45.0 |
| 1971 | do. | **60.6 | .. | **61.2 | .. |

*Measures of Fertility & Mortality in India - SRS Analytical series No.2, 1972, Office of the Registrar General
**Based on S.R.Data

Figures in the table above show that the expectation of life at birth has been rising both in India and Kerala during the past decades.

7. Efforts at controlling the population

In view of the accelerated growth of population noted above, and its effect on the various characteristics of the population all of which have not been beneficial to the State, efforts have been made to control the population through the Family Planning Programme. In this section an attempt shall be made to present in brief, the set up of the family planning programme progress attained in its implementation and the demographic impact of achievements so far made.

(a) Set up of the Family Planning Programme

Though the programme was started as early as 1957 in Kerala, very little headway was made till 1964. Since the latter year, a well-knit organisational infrastructure has been built up throughout the State, with 158 Rural Family Planning Centres (at least one in each block covering 60,000 to 1 lakh people) 21 urban centres each covering 50,000 population and 1603 sub-centres, each covering 10,000 population. Through these centres, necessary services are administered to the couples with the assistance of a large number of paramedical staff (consisting of about 1760 A.N.Ms, 932 L.H.Vs and 882 F.P.N.A's). To cater to the extension aspect of the programme 18 District Extension Educators, 10 District Mass Education Officers are working at the District level as also 100 Block Extension Educators at the Urban Centre/Block level. There is one Dist. Family Planning Medical Officer each in a District who is in charge of the implementation of the programme at the District level. Thus, at present more than 4,000 personnel are engaged in the programme. The programme offers a variety of methods like male and female sterilisation, IUCD insertions and different kinds of conventional contraceptives, like Nirodh, Diaphragm, Jelly/cream tubes and foam tablets.

(b) Progress of the Family Planning Programme

Till the end of 1972, 4.73 lakhs of vasectomies and 1.48 Tubectomies have been done in the State, making a total of 6.21 lakhs sterilisations since 1957. During the first seven years of the programme (1957-63) only 42059 sterilisations were performed, which hardly accounts for 7% of the total performance till 1972. The performance rate of sterilisation for the years 1971 and 1972, works out to 4.73 and 4.33 per 1000 population respectively.

The IUCD component of the programme which was started in 1965 has not been as popular as it was in the beginning. The total number of IUCDs inserted till the end of 1972 comes to 2.52 lakhs. During the last two years namely 1971 and 1972, the rate of IUCD insertions per 1000 female population has been 1.81 and 1.77 respectively.

There has been significant increase in the issue of conventional contraceptives (CC) since 1969. The estimated number of CC users has ranged between 10,000 to

17,000 during the years 1969-70 to 1972-73. The table below gives the progress of the programme since inception.

Table 7.1
Progress of Family Planning Programme in Kerala

| Year | Vasectomies | Tubectomies | Total | IUCD insertion |
|-------|-------------|-------------|---------|----------------|
| 1957 | 521 | 158 | 679 | .. |
| 1958 | 1633 | 1507 | 3140 | .. |
| 1959 | 4132 | 2236 | 6368 | .. |
| 1960 | 3079 | 1953 | 5032 | .. |
| 1961 | 3578 | 2939 | 6517 | .. |
| 1962 | 4182 | 2916 | 7098 | .. |
| 1963 | 10395 | 2830 | 13225 | .. |
| 1964 | 17908 | 3986 | 21894 | .. |
| 1965 | 36102 | 6532 | 42634 | 23062 |
| 1966 | 33251 | 6147 | 39398 | 43517 |
| 1967 | 49489 | 10504 | 59993 | 36887 |
| 1968 | 64081 | 14066 | 78147 | 39742 |
| 1969 | 42578 | 17982 | 60560 | 36816 |
| 1970 | 48847 | 20592 | 69439 | 32559 |
| 1971 | 76141 | 24192 | 100333 | 19521 |
| 1972 | *77000 | *29052 | *106052 | *19546 |
| TOTAL | 472947 | 147572 | 620519 | 251650 |

* Provisional Issue of Conventional Contraceptives

| Year | Condom (Nirodh) | Diaphragm | Jelly/Cream (Tubes) | Foam tablets | Estimated No. of CC users (No. of couple years of use) |
|----------|-----------------|-----------|---------------------|--------------|--|
| 1966-67 | 221760 | .. | 14596 | 89290 | 7209 |
| 1967-68 | 1291536 | .. | 12212 | 164000 | 23783 |
| 1968-69 | 1001528 | 154 | 11450 | 818723 | 19416 |
| 1969-70 | 1160106 | 103 | 5440 | 226970 | 22564 |
| 1970-71 | 1638686 | 51 | 2490 | 76730 | 25728 |
| 1971-72 | 2294847 | 75 | 780 | 20750 | 32541 |
| 1972-73* | 1445502 | 48 | 6113 | 7820 | 21169 |
| TOTAL | 9053965 | 431 | 52991 | 1404283 | |

*The estimation is done by assuming that a couple uses 72 Nirodh, 2 diaphragm, 7 Jelly/cream tubes and 72 foam tablets.

7(c) Demographic impact of the programme:

(i) Couples protected and unprotected:

Since the persons sterilised over the years are subject to mortality, the number of couples protected due to sterilisation will not amount to the total of sterilisations done during the previous years. Taking into consideration the expectation of life and the age distribution of sterilised persons in Kerala, an average annual attrition rate of 2.3% has been arrived at. It is seen that at the end of 1972, 5.64 lakhs of couples are currently protected as a result of sterilisation.

As regards the method of IUCD besides mortality other factors like expulsion, removal etc. also contribute to attrition. Considering the continuation rates assumed by S.P.Jain* and an average annual mortality attrition of 2.2% of the estimated number of couples currently protected by IUCD at the end of 1972, work out to 73530.

Thus the number of couples currently protected by sterilisation and IUCD together, comes to 6.33 lakhs or 19.78% of the couples.

As for the protection of couples by C.Cs which have no carry-over effect, the percentage protected (assuming 60% of the estimated number of CC users as protected) over the years is insignificant, as may be seen from the following table:

Table 7.2

Number & percentage of couples protected method-wise

| Year | No. of couples at Mid-year (lakhs) | Number | | | %age of couples protected by | | | | |
|------|------------------------------------|---------------|-------|----------|------------------------------|---------------|------|----------|-------------|
| | | Sterilisation | IUCD | CC users | All methods | Sterilisation | IUCD | CC users | All methods |
| 1957 | 22.81 | 671 | .. | .. | 671 | 0.03 | .. | .. | 0.03 |
| 1958 | 23.31 | 3757 | .. | .. | 3757 | 0.16 | .. | .. | 0.16 |
| 1959 | 23.82 | 9959 | .. | .. | 9959 | 0.42 | .. | .. | 0.42 |
| 1960 | 24.34 | 14692 | .. | .. | 14692 | 0.60 | .. | .. | 0.60 |
| 1961 | 25.01 | 20777 | .. | .. | 20777 | 0.83 | .. | .. | 0.83 |
| 1962 | 25.59 | 27291 | .. | .. | 27291 | 1.07 | .. | .. | 1.07 |
| 1963 | 26.18 | 39702 | .. | .. | 39702 | 1.52 | .. | .. | 1.52 |
| 1964 | 26.78 | 60391 | .. | .. | 60391 | 2.26 | .. | .. | 2.26 |
| 1965 | 27.40 | 101064 | 17836 | .. | 118900 | 3.69 | 0.65 | .. | 4.34 |
| 1966 | 28.03 | 1376562 | 46412 | 667 | 184641 | 4.91 | 1.66 | 0.02 | 6.59 |
| 1967 | 28.67 | 193535 | 62197 | 6066 | 261798 | 6.75 | 2.17 | 0.21 | 9.13 |
| 1968 | 29.33 | 266101 | 76591 | 5925 | 348617 | 9.07 | 2.61 | 0.20 | 11.88 |
| 1969 | 30.00 | 318511 | 84850 | 7184 | 410545 | 10.62 | 2.83 | 0.24 | 13.69 |
| 1970 | 30.69 | 379517 | 87894 | 9650 | 477061 | 12.37 | 2.86 | 0.31 | 15.54 |
| 1971 | 31.52 | 470655 | 79581 | 7824 | 558060 | 14.93 | 2.52 | 0.25 | 17.70 |
| 1972 | 32.24 | 564139 | 73530 | 6522 | 644191 | 17.50 | 2.28 | 0.20 | 19.98 |

The above table gives the estimated number of couples and the percentage protected each year by each of the methods. The net average annual addition of married females in the age group 15-44 (couples), during the period 1951-61 is estimated as 50,000 and that during 1961-71 as 65,000. Thus, during the first eight years of the programme (1957-64) as against possible net addition of 4.6 lakhs couples, only 60391 (13%) could be protected thus leaving unprotected 87% of couples accumulated during the period and the estimated original number of 23 lakhs couples. But, after

*S.P.Jain - Estimation of population Growth Targets under Family Planning Programme - Journal of Family Welfare Sept. 1969

the programme was geared up in 1965 till 1972, the protection extended by the programme methods, namely 5.84 lakhs couples is slightly more than the net addition of 5.2 lakhs during the period.

Thus, the programme during the 16 years since its inception in 1957, has given protection to only 6.44 lakhs couples, as against the net addition of 9.8 lakhs of new couples during the period.

(c)(ii) Births averted and the impact on birth rate

In the absence of reliable data on vital rates both before and after implementation of the programme, an attempt could be made to find out the impact on birth rate only through calculation of births averted. Following the model presented by S.P.Jain", but with parameters as they relate to Kerala, births averted over the years by each of the methods have been worked out. Detailed methodology of this calculation is given in another paper** published by this centre. In the same paper, the impact of the births thus averted till 1972, on birth rate and the resulting population during each of the years, as also the impact on birth rate till 1980, assuming the fulfilment of the targets set out in the fifth plan, have been worked out.

The total number of births averted, till the end of 1972, is estimated as 5.42 lakhs due to sterilisation, 1.27 lakhs by IUCD and 0.10 lakhs by conventional contraceptives - thus making a total of 6.79 lakhs. Assuming a rough estimate of the effect of non-programme methods as 12.5% of the programme methods, the total births averted works out to 7.64 lakhs.

As a result of the births averted, the birth rate is estimated to have come down from 38.9 during 1951-60 to 31.8 per 1000 in 1972. The fact that this estimated rate is slightly higher than the sample registration estimates of 31 and 30 respectively for the years 1971 and 1972 (1972 rate not yet published) may be accounted for by the effect of changes in age at marriage, and marriage rates, whose effect is not taken care of in the estimates of reduction in birth rate by the calculation of births averted.

8. The future population and birth rate

The goal of attaining a birth rate of 32 per 1000 by the end of the fourth Five Year Plan i.e. by 1973-74 has been attained already in Kerala. At the All India level this is a most unlikely event (According to the estimates by Department of Family Planning, Govt. of India, birth rate has come down only to 36.5 in 1972-73 from 41.7 in 1951-60).

* Ibid

** A note on the calculation of births averted due to Family Planning Programme in Kerala.

In view of the sustained higher (than of India) growth rate experienced by the State during the past several decades, the very high density in the State, the seriousness of her employment and food problems and her industrial backwardness, a higher goal of birth rate reduction for the State would only be justified. Besides, it has to be borne in mind that 80% of the couples are left unprotected by the end of 1972 and an average annual number of 77000 couples are likely to be added every year (till 1981). Hence, redoubled efforts have to be made on the Family Planning front.

The targets set out for Kerala for the fifth Five Year Plan period are given below:

Table 8.1

Targets set out in the Fifth Five Year Plan for Kerala

| Year | Sterilisation | IUCD | CG Users |
|----------------------|---------------|--------|----------|
| 1974-75 | 100000 | 35000 | 80000 |
| 1975-76 | 110000 | 40000 | 100000 |
| 1976-77 | 125000 | 45000 | 120000 |
| 1977-78 | 140000 | 50000 | 140000 |
| 1978-79 | 150000 | 60000 | 160000 |
| Total for five years | 625000 | 230000 | |

Even if a higher goal of birth rate reduction, as warranted in the Kerala situation is envisaged - say 20 per thousand by 1984 from 30 in 1974- the above target will have to be inflated by 1/3rd for both the 5th & 6th Five Year Plan periods. But the feasibility of realising even the present targets set out in the fifth Plan period is doubtful, if the average performance of the past eight years is taken as an indication (This works out to only 70000 sterilisations and 32000 IUCD per annum). Hence a still higher target is not within the realm of practicality, unless the programme is conceived as an important component of social and economic development and assigned top priority. Calculations have shown that if the targets of the Fifth Plan are achieved in full, and assuming the target of the last year of the plan period for the next year also, the birth rate will come down to 24.59 per 1000 by 1980.

Based on the births averted by Family Planning performance till 1972 and on the assumption of realising the above targets during 1974-79 if the death rate of 9.7 continues in later years, the population of Kerala will be 254 lakhs in 1979 midyear and 262 lakhs in 1981 midyear.

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This Demographic Research Centre started in August 1958 gives top priority to

- (i) collection of information on attitude towards family planning which may be of immediate use in education programme and later help in assessing the changes in these attitudes brought about by family planning programme,
 - (ii) investigation of socio-economic factors affecting fertility which may lead to appropriate social action for reducing birth rates,
- and
- (iii) study of the effect of family planning programme on attitudes and birth rates in areas where it is being implemented.