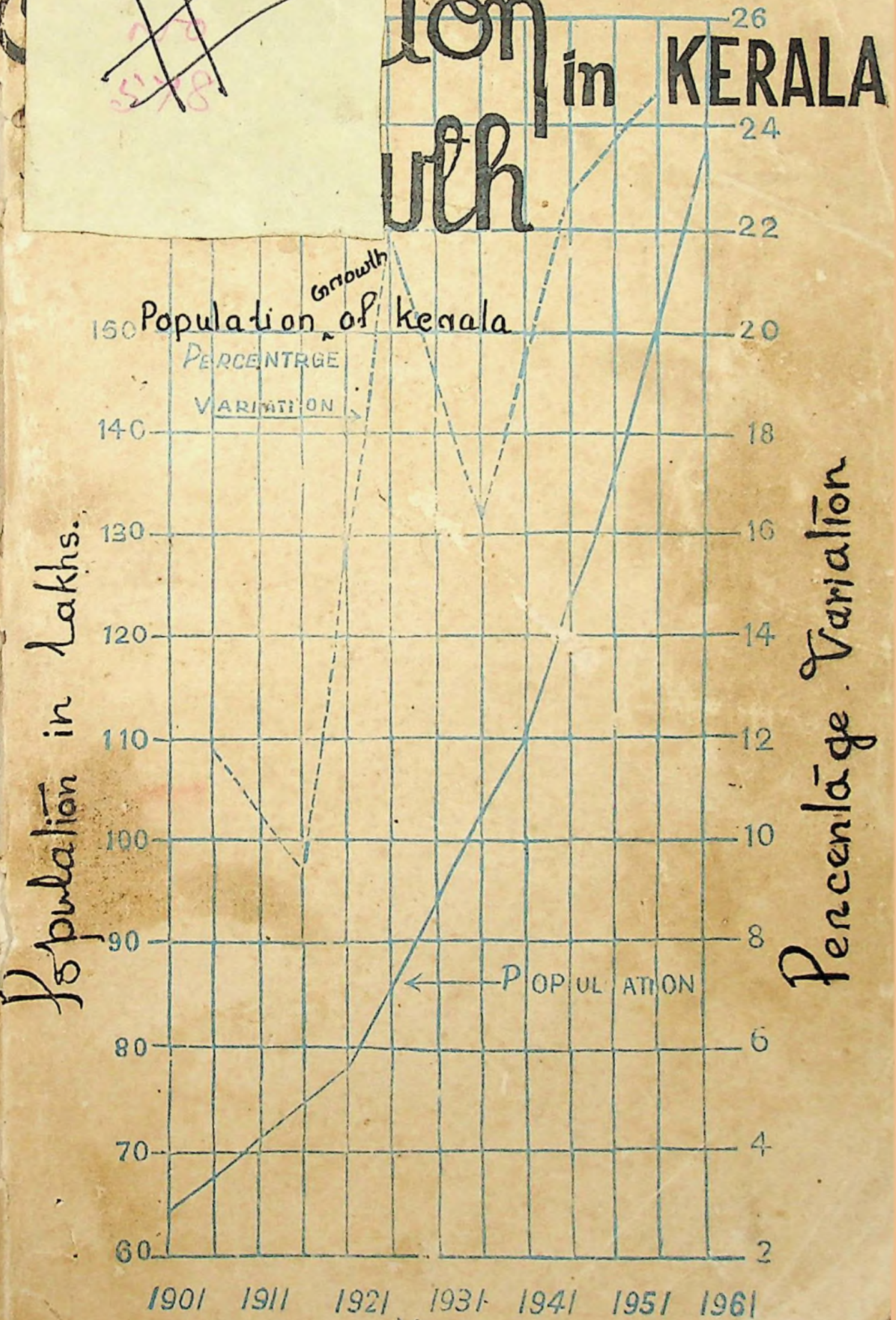
...ion in KERALA
...uth



Edited By R.S. kur...
K.A.G...

DEMOGRAPHIC RESEARC
BUREAU OF ECONOMICS AN

POPULATION GROWTH IN KERALA

ITS IMPLICATIONS

Edited by

Dr. R. S. Kurup
and
K. A. George

Assisted by

N. V. George
and
A. N. Bhaskaran Pillai

TRIVANDRUM, MARCH 1965

PRINTED BY THE S.G.P. AT THE GOVERNMENT PRESS,
TRIVANDRUM, 1966.

CONTENTS

Part III

DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION OF KERALA

Part IV

SOCIAL AND MEDICAL IMPLICATIONS OF THE GROWTH OF POPULATION IN KERALA

Part V

ECONOMIC IMPLICATIONS OF THE GROWTH OF POPULATION OF KERALA

Technical Papers Presented:

Part VI

CONCLUDING SESSION

APPENDIX

ACKNOWLEDGEMENTS

The Demographic Research Centre, Trivandrum wishes to record its gratitude to those who extended their valuable help in making the Seminar a success.

The Centre is grateful to Shri V. V. Giri, the then Governor of Kerala and Shri R. Sankar, the ex-Chief Minister for the active interest they have shown. Special thanks are due to the Directorate of Family Planning whose generous grant of Rs. 5,000 made possible the conduct of the Seminar.

The Centre would like particularly to mention former Ministers of the State Shri K. A. Damodara Menon who inaugurated the Seminar and Shri M. P. Govindan Nair who presided over one of the Sessions of the Seminar. The Centre would like to express its sincere gratitude to Dr. C. Chandrasekhar, Director, Demographic Training and Research Centre, Bombay; Dr. C. O. Karunakaran, President, Indian Medical Association; Dr. B. Natarajan, M.L.A., Madras and Shri N. M. Patnaik, the Chief Secretary to the Government of Kerala, for presiding over the various Sessions of the Seminar.

The Centre is grateful to Shri K. Swaminathan, the Superintendent of Government Presses, for getting the present volume printed neatly and in time. Thanks are due to all those who contributed to the success of the Seminar by partaking in the discussions and attending the deliberations.

DR. R. S. KURUP,
K. A. GEORGE,
The Editors.

FOREWORD

The volume of literature on demography in India is growing steadily, thanks to the continued efforts of demographers, sociologists and economists. Though the field of demography had been engaging the attention of the intelligent public of Kerala, a comprehensive document covering the different aspects of the population problem had long remained a felt need. This volume based on the papers presented in the Seminar on the "Implications of the growth of Population in Kerala" held on the 19th and 20th of August 1964 under the auspices of the Kerala Demographic Research Centre at Trivandrum will, to a great extent, satisfy this need. The volume contains, besides an overview and summary of discussions, all the texts of the papers presented and speeches delivered.

The editors of this volume, Dr. R. S. Kurup and Mr. K. A. George shared between them the main burden of organising the Seminar.

DR. P. K. GOPALAKRISHNAN,
Director,
Bureau of Economics & Statistics.

Trivandrum,
18-3-1965.

MESSAGE FROM HIS EXCELLENCY THE GOVERNOR OF KERALA

RAJ BHAVAN,
TRIVANDRUM,
18th August 1964.

MESSAGE

I am glad to learn that the Demographic Research Centre of the Bureau of Economics and Statistics is holding a Seminar on the implications of the present growth of population of Kerala. It is well known that our State has the maximum density of population in the country and the rate of growth is also one of the highest in the world.

It is necessary that we should adopt concerted measures to control this excessive and explosive growth of population which tend to defeat the very purpose of Planning for a better and prosperous India. It is rather surprising how the Family Planning methods have not spread, as they should, in the rural and urban areas of the country.

As demographers you can analyse and evaluate the implications of the growth of population and suggest remedial measures. The implications are many indeed; it adversely affects our progress, reduces the family income and it would be neither possible for the State nor the individual to cope with the economic and social problems which unchecked growth of population brings in its wake. I am sure your deliberations will be useful and fruitful.

I wish your Seminar all success.

(Sd.)
V. V. GIRI,
Governor of Kerala.

MESSAGE FROM SHRI R. SANKAR, CHIEF MINISTER OF KERALA

R. SANKAR
CHIEF MINISTER OF KERALA

TRIVANDRUM,
17th August 1964.

MESSAGE

I am glad to learn that the Demographic Research Centre, Trivandrum is holding a Seminar at Trivandrum on the 19th and 20th of this month on "The Implications of the present rate of growth of population in Kerala". In the context of the planned economic development in which the country is presently engaged, the biggest problem that confronts the planners is the enormous growth of population. It is a fact known to all that this problem is in its most acute form in Kerala. A scientific approach to this problem is therefore an essential pre-requisite for planning and I have no doubt that a Seminar of this kind will be quite useful especially at a time when the formulation of the Fourth Plan is engaging the active consideration of all concerned.

I have much pleasure in wishing the deliberations at the Seminar all success.

(Sd.)

R. SANKAR,

PART I

OVERVIEW AND CONCLUSIONS

OVERVIEW AND CONCLUSIONS

By

Dr. R. S. Kurup, K. A. George and N. V. George.

1. *Introduction.*

The State of Kerala which lies at the southernmost corner of India has an area of 15002 Sq. miles and a population of 169.04 lakhs according to 1961 census. The formation of the State took place in 1956 when the former T. C. State, excluding the 4 southern taluks of Thovala, Agastheeswaram, Kalkulam, Vilavankode and a portion of Shencottah taluk, was integrated with the Malabar district of former Madras State and the Kasargode and Hosdurg taluks of the South Canara district of the erstwhile Mysore State to form the State of Kerala as per the States' Reorganisation Act, 1956.

The rate of growth of population of the State has shown an increasing trend since 1901 except for two breaks, one between 1911 and 1921 and the other between 1931 and 1941. During the last two decades, the geometric rate of growth exceeded two per cent per year. This rate of growth when considered along with the already dense base population in a low income State like Kerala is a source of serious concern to the planners and demographers of the State. It was felt therefore that this should be the subject of a Seminar which was proposed to be held under the auspices of the Demographic Research Centre, Trivandrum. The specific subject chosen was "The implications of the present growth of population of Kerala".

2. *The Seminar Sessions.*

The Seminar was held on the 19th and 20th of August 1964 at the Kanakakunnu Palace, Trivandrum. It was inaugurated by Mr. K. A. Damodara Menon, the then Minister for Finance and Industry,

Kerala. Sri M. P. Govindan Nair, the then Minister for Public Health, Kerala presided. Sri N. Gopalakrishnan Nair, Additional Director, Bureau of Economics and Statistics welcomed the gathering and Dr. R. S. Kurup, Deputy Director proposed the vote of thanks.

Besides the inaugural session, three technical sessions in which

(1) The demographic characteristics of the population of Kerala.

(2) The social and medical implications of the present growth of population of Kerala.

(3) The economic implications of the growth of population of Kerala were discussed

and a final concluding session were held.

The first technical session on the demographic characteristics of the population was presided over by Dr. C. Chandrasekharan, Director, Demographic training and Research Centre, Bombay. Dr. R. S. Kurup, Dr. K. C. Zachariah, Dr. B. Natarajan, Dr. P. K. Gopalakrishnan, Dr. R. Rama Varma, M|s. M. V. Raman, N. C. Das, V. C. Chidambaram, V. Subramonia Swamy and R. Ramalingam took part by presenting papers and partaking in the discussions at the session. The second technical session on the "Social and medical implications of the growth of population" was presided over by Dr. C. O. Karunakaran, formerly President of the Indian Medical Association and first Principal of the Medical College, Trivandrum. In the discussions Dr. M. Thanka Velu, Dr. G. Velayudhan, Dr. C. Chandrasekharan, Dr. B. Natarajan, Dr. R. Rama Varma, M|s. B. R. Kholi, G. K. Mehrotra, G. Surendranathan Nair and G. Pradhapachandran Nair participated. The last technical session on the 'Economic implications of the growth of population of Kerala' was presided over by Dr. B. Natarajan, (formerly Economic Adviser to the Government of Madras). Professor V. R. Pillai, Dr. P. G. Kesava Panikkar, Dr. R. Rama Varma, Dr. P. K. Gopalakrishnan, Dr. C. Chandrasekharan,

M|s. M. K. Devassey, N. Gopalakrishnan Nair, K. Balakumaran Nair, K. Narayanan Nair, P. S. Sharma, B. D. Kale, K. A. George and B. R. Kohli took part in the discussions.

The concluding session was presided over by Sri N. M. Patnaik, Chief Secretary to the Government of Kerala; Dr. P. K. Gopalakrishnan, Director, Bureau of Economics and Statistics welcomed the gathering. A summary of the proceedings of the Seminar was then presented by Sri K. A. George, Bureau of Economics and Statistics. Sri. V. C. Chidambaram proposed the vote of thanks.

While the papers presented and the speeches delivered are reproduced in the pages that follow, an overview of the papers and discussions that took place in the various sessions is given below in the order of business that took place at the Seminar.

3. *Inaugural Session.*

The discussion in this session brought to the notice of the conference the low per capita income of Kerala from agricultural sector inspite of its high return per acre compared to other States. This is due to the low per capita land available for cultivation (27 cents). The State is at present deficit in food production by about 50%. The food deficiency in the State is increasing as a result of the rapid growth of population. It is therefore necessary to control the natural increase of the population by shifting partly the emphasis now placed on death control to birth control. The importance of propagating the knowledge of family planning to motivate the people and to achieve population control was also stressed. The alarming growth of the population within the limited area of the State and the imperative necessity to control it were voiced by all the speakers.

4. *Session on Demographic Characteristics of the Population.*

In this session, the features of the Kerala population and problems emanating from the rapid

growth of population were discussed. An overview of the papers presented at the Seminar and the discussions made is presented in the coming paragraphs. A consideration of the growth of population, composition and distribution precedes the presentation of the factors affecting these.

4.1. *Population growth and problems.*

Kerala has certain unique demographic features which distinguish it from the other States, in the Indian Union. Though it is the smallest State in India, it has the highest density of population. The density stood at 1127 persons per square mile in 1961 which is more than thrice that for the whole of India. In fact, the density of population of the State, even at the beginning of the century was higher than the present all India density.

The population of this State was 63.96 lakhs at the beginning of the century. It rose to 169.04 lakhs in 1961, thus registering an increase of over. 10 millions during the last 60 years. The land available per person was only 57 cents in the State and the land cultivated, only 27 cents. This is the lowest for all India and is indeed a very low figure for any country or State, let alone in the case of an agricultural State like Kerala.

The rate of growth of population of the State since the turn of the present century and especially from the decade 1921-1930 onwards had been phenomenal. During 1951-60, the decennial growth was 24.76% as against 21.50% for all India. The geometric rates of growth for the decade were 2.24 and 1.98 respectively. Due to this high rate of growth, the proportion of the population of the State to that of the whole of India was steadily increasing. It was only 2.71% in 1901, but increased to 3.85% in 1961. While the population of Kerala doubled within 50 years between 1901 and 1951, that for India did not double even after 60 years from 1901. This does not mean that the rate of growth in Kerala is anything unprecedented. Countries like Brazil, Equdaor, Venezuela, Malaya, Israel, Vietnam, etc., have shown even higher rates of growth. What has

made the demographic situation in Kerala explosive is the combination of the twin factors of a large base density with a high rate of growth resulting in large annual additions to the population.

Kerala has been a long settled country and the exploitation of its arable area was begun from very early days. Naturally the scope for extensive cultivation gradually dwindled down. The increase in population gradually out-stripped the increase in production, so much so that the deficit in foodgrains has grown larger over the years. At present only a little over half the requirements of rice is produced at home.

The short fall in the percentage increase in per capita income over that in the regional income indicates a vicious situation created by the population increase. Whereas, between 1955-56 and 1960-61 the regional income increased by 47%, only an increase of 32% was registered in the per capita income; i.e. 15% of the gain in the regional income during the five year period was swallowed up by the increase in population alone. Another disturbing factor created by the population growth is the growing unemployment in the country. There will be a back. log of about 8 lakhs of unemployed persons by the end of the third plan. This will swell further by about 9 lakhs by the end of the IV Plan as the contribution from the new entrants into the labour force during the period. It is indeed a stupendous task to find employment to the ever growing army of job seekers.

The rapid increase in population is creating other serious problems as well. The expenditure necessary to meet the growing demands on social over heads like education, medical and public health measures, is enormous and is a drain on the much needed resources for investment in productive enterprises. It has been estimated that 6.81 lakhs of students will have to be provided with schooling in the first standard in 1965. Consider also the number of students that will have to be provided with schooling in the higher classes and colleges and the expenditure necessary to keep the vast machinery going.

Similarly, the additional expenditure necessary to provide medical and public health facilities, transportation facilities and other social amenities to the growing population is enormous.

The opinion of experts who participated in the discussions was unanimous about the gravity of the problem of the rapid growth of population and the imperative necessity of controlling it. It was also agreed that the higher net rate of growth in recent decades as a result of the reduction in death rate without a reduction in birth rate acting on a relatively large base population contributed to the rapid growth of population of Kerala. Therefore the solution to the problem of population lay in controlling births.

In this context a study of the size, distribution and composition of the population of Kerala and the factors associated namely fertility, mortality and migration is of special importance.

4.2. *Distribution of Population.*

In the context of the high overall density of population in the State it is pertinent to examine the pattern of the regional distribution of population. The districts of Alleppey and Trivandrum have more than 2000 persons per square mile. Kozhikode, Quilon, Ernakulam and Trichur have densities ranging between 1000 and 2000 persons. Only the other 3 districts Palghat, Cannanore and Kottayam have densities below 1000. The districts containing larger proportion of high land areas are thinly populated. In 1951 and 1961 Alleppey was the densest district and Kottayam the most thinly populated district.

There is considerable variation in density among the 55 taluks of the State. 13% of the taluks have a density below 500 per square mile. 18% of the taluks have density between 500 and 1000, 51% density between 1000 and 3000 and 18% above 3000. The taluks in the coastal region are thickly populated. 64% taluks in the State have a population between 2 lakhs and 4 lakhs.

The taluks are again subdivided into 1574 revenue villages (excluding urban areas). Most of these villages (70%) have a population above 5000 persons. The villages in other States in India vary from this pattern. 62% of the villages in India have a population below 500. But in Kerala there are only 0.4% in this category. The Kerala villages have a further sub-division into Karas|Desoms.

According to 1961 Census, 15% of the population of Kerala live in the 92 towns while according to 1951 census demarcation of urban and rural areas, 14% of the total population lived in 94 towns. In 1961 nearly 35% of the urban population lived in towns with population 20,000 and 50,000. 27% of the urban population were living in the 4 towns with population above one lakh in 1961.

.4.3. *Composition of Population.*

Like other developing countries, Kerala has a base-heavy population, having a large proportion of the population in the early ages. 41% of the population fall in 0-14 age group according to 1961 census. In 1951 the percentage was 38. The increase in the proportion in this age group, increase the dependency burden on the earners. 8% of the population are in the older age group 55 years and above. The percentage of female population in the reproductive age group 15-44 years has decreased from 46% in 1951 to 44% in 1961.

In Kerala, females outnumber males. According to 1961 census, there are 1022 females for every 1000 males. In India, as a whole, there are only 941 females for 1000 males. Only in the States of Orissa and Kerala there are more females than males. The sex ratio in Kerala has shown a steady increase from 1901 to 1951. It has increased from 1002 in 1901 to 1028 in 1951. During 1951-1960 there was a slight decline from 1028 to 1022.

Kerala State stands foremost in literacy among the States in India. 55% males and 39% females in Kerala are literate according to 1961 census. While the all India percentage of literacy is only 24, the

percentage in Kerala is 47. Among the districts, there is considerable variation in the percentage of literacy. The districts of the erstwhile Malabar area are backward in literacy. Alleppey district stands foremost with 56.9% and Palghat district stands last with 34.1%.

The occupational pattern of the population of Kerala presents certain unique features. The percentage of agricultural workers and cultivators is lowest in Kerala among the States of the Indian Union. The occupational classification of workers in 1951 and 1961 censuses have shown the following main features.

1. There is a decrease in the proportion of cultivators, (from 7.5 to 7.0) and agricultural labourers (from 8.2 to 5.8).
2. There is a slight increase in the proportion of workers in "other services" sector which is matched by the decrease in agriculture.
3. The percentage of workers has increased from 32% in 1951 to 33% in 1961.

Though a part of the differences may be due to conceptual changes, the fact that new entrants to the labour force have been pushed to other sectors due to overcrowding in agriculture, is evident. In all other states except West Bengal, agricultural labourers and cultivators constitute more than 20%. In most of the States it is above 30%. In Kerala the percentage is only 12.8%. This is not due to high industrialisation in Kerala. But agriculture in Kerala being overcrowded, the new entrants to the labour force have been forced to take up employment in other sectors. The per capita availability of land in Kerala is only 57 cents. The availability of cultivable land is only 27 cents. As such the scope for additional employment in the agricultural sector is very little.

4.4. *Fertility and family planning.*

The trends in fertility of the people of Kerala over their reproductive years show some remarkable differences with those of the neighbouring States of

Madras and Mysore. As revealed by fertility studies, reproductivity starts at a very low level before 20-24, rapidly increases in this age group and continues at a fairly high level to the age of 35-39. In 40-44 years it declines to a very low level. In Madras as well as in Mysore, reproductivity is fairly high in 15-19 age group, attains a maximum in 20-24 age group and declines thereafter. After age 39 it is very low. Thus reproductivity is fairly high in Kerala in the age-group 20-39 years and continues to the age group 40-44 years while in Madras and Mysore this period begins at age 15 and lasts only upto age 39.

The marital and nuptial fertility rates of Kerala women have been found to be greater than those of Madras and Mysore. It is also found that the fertility of females in the age group 30-39 years is greater than those of the same age group in Madras and Mysore.

There are many factors which affect human fertility. Their inter-relations are not easily recognisable. The effects of these factors on fertility may be positive or negative. In Western countries, the practice of contraception is an important factor affecting fertility, but it has yet to make its impact on the fertility behaviour of the people of this State. An examination of the factors affecting fertility in the State reveals that while some of them encourage fertility, others tend to reduce it. It is therefore natural to suspect that Kerala will continue to have a sticky birth rate for some more years to come.

Age at marriage is a factor which affects fertility. Kerala has a higher age at marriage compared to other States in India. It has been estimated that the average ages at marriage of females in urban and rural areas of the State are 20.7 years and 19.9 years respectively. The corresponding averages for all India are 17.8 and 15.4 respectively. The proportion of single females in the age group 15-24 years is fairly large in Kerala (43%) compared to Madras (26%) and Mysore (8%). But it has been found that there is no significant difference in the proportion of married females in 20-24 age group among

these States. The large difference observed in the proportion of married females in 15-24 years is therefore due to the presence of a larger proportion of spinsters in this age group in Kerala.

Another factor affecting fertility in Kerala is the lower proportion of widows. It has been estimated that the number of widows per 1000 females in 25-44 age group was 14 in Madras, 15 in Mysore and only 7 in Kerala. This low proportion will be having its own effect on the present fertility of Kerala but at the same time it shows that the gain in future fertility will not be substantial on this score.

The social, cultural and religious customs also will have some influence on the fertility pattern. The extent of their influence in the State is not precisely known. However, abstinence practised on holydays and auspicious days, pilgrimages by male sex, restrictions on sex life etc. will be having some dampening effect on fertility in the State.

The higher literacy of the Kerala people with further prospects for improvement is likely to influence fertility adversely because an educated person is more receptive to the small family ideal.

The above analysis of the various factors affecting fertility in Kerala reveals that factors favourable as well as unfavourable to fertility are present in the population of the State. While the higher age at marriage, the higher level of literacy, improvements in the standard of living etc. tend to reduce fertility other factors like the lower proportion of widows, the higher marital and nuptial fertility rates etc. act in the opposite direction.

The concensus of opinion at the session was in favour of bestowing greater attention to family planning methods to achieve birth control. Among the various methods of family planning in use, sterilisation is considered to be the best under the present conditions in the State. In this context a discussion on the present level of attitude to, knowledge and practice of family planning in the State is also of special interest.

Significant advances have been made in the matter of establishing a machinery for promoting the family planning movement in the State. The number of family planning clinics rose from 10 in 1955 to 351 at present. These clinics are advised by district and local committees. Contraceptives are distributed at subsidised rates or free of cost. Facilities for sterilisation are provided in all the major hospitals in the State.

The attitude of the couples towards family planning is a very important factor which determines the success of the programme. Surveys conducted by the Demographic Research Centre, Trivandrum in the district headquarters during 1959-60 and subsequently in Attingal town and Sreekariyam village during 1961-62 throw some useful information in this regard.

It was found from these surveys that educated persons were more favourable to family planning than illiterate or semi-literate persons. Persons in the higher income groups were more favourably disposed to family planning. This might be due to the fact that they were more educated. In the urban areas, the percentage favouring family planning varied according to the differences in educational, social and cultural standards, but they were substantial in all the areas. Most couples did not prefer to have a spacing less than two years and 40 to 50% preferred to have 4 or less children. The survey in Sreekariyam conducted at a later period (in 1961-62) showed that the proportion of couples who were favourable to family planning was increasing.

The level of knowledge of family planning methods was low in the towns surveyed. Except in Quilon, Kottayam and Attingal, the percentage of husbands having sufficient knowledge of family planning was only between 5 and 10. In Kottayam it was 25%, in Quilon 34% and in Attingal 51%. In the Sreekariyam survey it was found that 74% of males and 31% of females who were currently married were aware of family planning methods. This may, to a certain extent, be an indicator of the momentum gathered recently in family planning programme.

Turning to practice of methods, the most frequently used methods were "safe period" and condom and the method of "elementary precautions". In Kozhikode town, spermicidal method was the most popular method while in Kottayam the method of "elementary precautions" was more popular than other methods. In Trichur 53% of those who practised family planning resorted to sterilisation. Reasons like lack of effectiveness, trouble in application, deleterious effect on health or fecundity or interference with enjoyment were given only by a small percentage of persons for not practising family planning. In Trivandrum the major reason given was lack of effectiveness. Only in Palghat, financial difficulty was adduced as the major cause.

An interesting fact which is revealed from the study of visitors to family planning clinics in 1962 is that as a religious group Hindus are visiting clinics in greater proportion compared to others. Another finding is that couples with less than 5 years' marriage duration seldom visited the clinics. Males over 30 years and females over 25 years formed the majority of visitors to the clinics. It was also seen that a few couples discontinued the practice after a time. The importance of motivating couples towards accepting family planning methods is evident here. The higher pregnancy rates obtained on analysis of the data revealed lack of proper care in using contraceptives among users. Concerted attention is necessary to remedy this defect.

Sterilisation which is devoid of many of the defects associated with other family planning methods is gaining popularity with the couples as revealed by the number resorting to this operation. Upto March 1964, 46,000 persons underwent this operation (30,408 males and 15,592 females). Males in the age group 35-39 years and females in the age group 30-34 years formed the large majority of sterilised persons. Muslims were seen reluctant to adopt the method. Illiterate or semiliterate persons preferred this method.

In view of the growing popularity of sterilisation among the poorer classes and its effectiveness in controlling births, a scheme for reducing births from 40 per 1000 to 20 in the three plan periods. 4th to 7th was presented as part of the report. For this, it has been estimated that 7.5 lakhs of sterilisations have to be carried out fixing the child birth ceiling at 3. This means that nearly 5 operations will have to be done per thousand population. If the lower income groups alone take to sterilisation there will be a reduction of 40% in birth rate. In this case about 51,000 sterilisations are to be done per year for the next 10 years. The remaining 10% reduction will have to be brought about by family planning by the higher income groups by any method they prefer. This is on the assumption that 68% of the population belong to the lower income groups. The cost of the scheme will be nearly Rs. one crore for a five year period.

4.5. Mortality:

As stated earlier, the unprecedented rate of natural increase of the population of the State is largely due to the reduction in mortality rates in recent decades. It has been estimated that the death rate in the decade 1951-60 is 16.1 per 1000 population.

Among Indians, the Keralites are well known for their better civic sense, clean habits and healthy living and it is only natural that they enjoy longer life than others. The expectation of life at birth in Kerala as estimated by the Registrar General of India is 48 years where as for all India it is only 41 years for the decade 1951-60.

It is therefore interesting to see the extent of the change that has come over the years in the conditions of mortality in the State. The expectation of life at birth is a simple index suited to measure the mortality conditions of a community over a period of time. Other indices like crude death rate, age specific death rate, etc., are also useful measures of general mortality.

The life tables for Kerala constructed by the Demographic Research Centre, Trivandrum using census data reveal that the expectation of life for males at birth rise from 25.49 years during 1911 to 1920 to 46.17 years during 1951-60. The corresponding figures for females are respectively 27.41 years and 50.00 years. The all India figures are much lower. Another important fact noted is that in all the decades, the expectation of life at birth of females is greater than that of males.

Thus in the preceding forty years, the expectation of life at birth of a Keralite has increased by 21 years in the case of males and by 23 years in the case of females. It is also seen that, since 1931-40 the gain in expectation of life was very rapid. This may be a reflection of the improvements in medical and public health facilities in this State.

The expectation of life at age 15 was much higher than that at age 0 till 1941-50. This may be due to the high infant mortality rates which prevailed in the State. But the situation has changed considerably during 1951-60. In this decade, the expectation at age 15 was lower than at age 0 and that at age 10 is only slightly higher. This may be a pointer to the emerging trend when as a result of the reduction in infant mortality rates, the expectation of life at birth will gradually become higher and higher and finally top the expectation at other ages as found in the case of advanced countries like U.S.A., United Kingdom, etc.

4.6. Migration:

Kerala had been a net in-migrating State till very recent times. Significant out-migration began only from the decade 1931-40. The maximum contribution was during 1951-60 when there was a net out-migration of 3.85 lakhs.

The figures on migration given in the papers discussed also reveal that about 233,000 persons born outside Kerala were enumerated within the State in 1961 and 618,000 persons born in Kerala were enumerated outside giving a balance of 385,000 against the

State in 1961. About 95% of all life time in-migrants to Kerala were born in the State of Madras, Mysore, Andhra Pradesh and Gujarat, Madras alone accounting for 82%. Out-migrants from Kerala also clustered in the neighbouring States, but the distribution was more even than in the case of in-migrants.

The in-migrants to Kerala had a more balanced sex ratio than the out-migrants. In 1961 the sex-ratio was 1110 in the case of life-time in-migrants, it being smaller when the States of origin is nearer.

The net out-migration affected mainly certain age groups of the population. Loss was heaviest around the age group 20-24 years. At ages 40 and above it was practically nil; in fact the State gained through migration in each of the higher age groups.

The distributions of in-migrants and out-migrants according to industrial classes were significantly different; whereas about 50% of in-migrants was engaged in plantation labour and another 20% in services, a majority of out-migrants from the Travancore-Cochin area and probably those from the Malabar area also were engaged in "Services". They are also relatively over-represented among "non owner-cultivators".

The employment opportunities outside the State are attracting the people of the State where there is a large number of unemployed persons. When they grow old or can get a job in the State they return to the State. Thus out-migration from Kerala is only a temporary phenomenon.

5. Session on Social and Medical Implications of the Growth of Population of Kerala.

The rapid growth of population of Kerala has many social and medical implications which deserve special attention in the context of the five year plans wherein special emphasis is laid on the welfare of the society. The medical and social implications warrant urgent attention of the planners so as to control the growth of population. A consideration of these implications should naturally culminate in the ways

and means of tackling the situation. In the following paragraphs, this order will be followed. It may however be remarked here that most of the papers presented at the seminar did not elaborate the implications, but were concerned with the means of birth control.

Rapid growth of population necessitates the duplication of social amenities like educational institutions, transport facilities, health institutions, etc. The overhead costs involved in these are very large. They constitute a considerable drain on the resources which are necessary for investment in much needed developmental activities. The cost of housing the increasing population is also enormous.

In 1963-64, about Rs. 19 crores were spent on school education alone in Kerala, about Rs. 1.37 crores on University education and about Rs. 0.66 crores on technical education. There were about 36 lakhs of students in Kerala schools in 1962-63 which was about 28% more than that in 1957-58. A similar increase was noted in the case of students attending colleges for general education and technical education. The cost of education is thus on the increase. The per capita expenditure also rose to Rs. 11.23 during 1962-63 from Rs. 6.36 in 1957-58. With the increase in population, the need for educational services, also naturally increases. About 6.48 lakhs of children will attain schooling age in 1970 at the present birth rate of nearly 40 per thousand population and the expected death rate of 10 per thousand population in 1970. A large number of schools and colleges will have to be provided for them at each stage and there will be an enormous expenditure in this regard.

The extra costs in money and men needed for providing health measures to cope with the rapid increase in population will also increase. The per capita expenditure on health services was Rs. 3.62 in 1962-63 from Government source. On 31-3-1963, there were 86 Government Hospitals, 205 dispensaries, 9 secondary health centres, 104 primary health centres and about 33 other medical institutions (allopathic)

with 15,753 beds in all. There were also 242 Ayurvedic hospitals|dispensaries with 857 beds. There was thus 0.89 beds per 1,000 population. With the increase in population, all these facilities will have to be increased correspondingly. Besides, the cost for providing latrines, good drinking water, health resorts, etc., free vaccination against epidemics and other necessaries needed for a healthy life to the growing population will be very large.

The social and medical implications of the growth of population are felt in many other spheres as well. Housing is one such sphere. Yet another is the additional transportation facilities that will have to be provided. The expansion in the machinery for the promulgation of law and order is a third one. Many more examples like this can be cited.

Besides the implications of the growth of population mentioned above, it extends over to their social behaviour, customs, habits, social institutions, outlook, etc. A population that is increasing fast has necessarily to adjust its various social institutions to suit the new circumstances and therefore the changes in them, though gradual, will be persistent. A sociological assessment of these implications will indeed be interesting.

A consideration of primary and secondary factors that affect fertility was made in some of the papers. The primary factors are those that directly bring about change in fertility and secondary factors are those which in themselves do not bring about any change, but influence the primary factors and thus bring about fertility changes. Among primary factors may be mentioned the age at marriage, contraceptive efforts, practice of abortion, etc. Secondary factors include religion, economic conditions, occupation, educational status, urbanisation, etc.

Population can be controlled by influencing fertility by one or more factors mentioned above or directly through controlling the primary factors or indirectly through the secondary factors or through both. Many modern nations have succeeded in controlling fertility by changing the secondary factors.

The direct approach has been tried by countries like Japan through induced abortions and they succeeded in reducing fertility. The Government of India are trying the third method, namely a combination of direct and indirect approaches, though with varying accents, to control births. It is agreed that quick results in reducing births is an imperative necessity for India and this cannot be achieved by concentrating on the secondary factors alone. A desired change in fertility can be brought about by the adoption of primary factors only, but the sustained efforts necessary to keep up the improvement as well as the cost involved will be substantial. On the other hand, it has yet to be established which all secondary factors are more important with regard to their capacity to bring about changes in fertility. Obviously, most of the secondary factors like education, economic conditions, social customs, urbanisation which are known to have a bearing on fertility, are gradually changing as a result of the developmental activities. But even then, in order to bring about an atmosphere in which fertility reduction is possible, these factors should be given due consideration.

A direct approach of controlling population through the primary factors that affect fertility has to be given more emphasis here as this will bring about changes in birth rates more rapidly than the other approaches. This embraces all the family planning methods known to the world.

Family planning implies both child birth ceiling and child birth spacing. Between these two, the former is the direct answer to the problem of population control although the latter also can help by reducing the number of children. For a population which is slow to adopt the idea of child birth ceiling as that of Kerala, the latter assumes added importance in any scheme for reducing fertility.

Preparing the population to adopt family planning is an important step in the promotion of family planning. The earlier fears that Indian Society will be resistant to the family planning idea has been proved false. If they are approached properly, they

have no reluctance to receive these ideas. It is therefore necessary to educate the people the methods of family planning and to motivate them. They have to be taught first the physiology of reproduction and the need for family planning.

The bulk of the population of the State is illiterate and socially backward. If substantial results in birth control are to be achieved, this section of the population has to be educated and motivated. This is a strenuous task, but is necessary for the success of birth control. Therefore the literature on family planning and allied subjects has to be simplified and taught in their own dialect. Demonstrations by pictures and models are also advantageous in this regard. Elements of demography may be taught in combined sessions, and the physiology of reproduction, in separate groups for males and females. The methods of family planning may then be taught through group discussions with wives and husbands separately. Male and female educators can help to clear any doubts which are likely to arise. When this educating and motivating programme is over, the family planning methods can be put through.

The education and motivation of the educated sections of the population are easier. They can be approached through the press, books and periodicals, pamphlets, radio, etc. Even though a majority of the persons now coming up for family planning belong to the educated category, still there are large numbers among them who are ignorant of the elements of demography as well as of the physiology of reproduction and who do not realise the need for family planning.

The population in the younger age groups which form the next generation of couples have to be prepared even now for the family planning programme. Since education upto matriculation is going to be adopted as the minimum standard, physiology of reproduction and elements of demography may be taught in the high school classes, preferably at the matriculation stage. Methods of family planning

should not be taught in this sexually maturing age. It is not necessary to teach these in post-matriculation classes even. A generation with sufficient knowledge in the physiology of reproduction and elements of demography and with a keen awareness of the need for family planning will search out the methods and resort to them.

Among the various methods of birth control now in vogue, the most important are:

(1) sterilisation operation, (2) the appliance methods, (3) the non-appliance methods, (4) Induced abortion, (5) Oral contraceptives and (6) Intra-uterine devices.

(1) **Sterilisation:**

Sterilisation operation is at present the most effective and popular method of birth control suited to the conditions in the State. Between vasectomy and salpingectomy, the former is the easier one and needs no hospitalisation. The latter is equally easy when performed with child-birth, and need no extra hospitalisation, but when it is performed at other times, the surgeon will have to adopt special methods. Hospitalisation is also necessary in such cases and the women will have to abstain from sexual inter-course and heavy work for 4 to 6 weeks.

Though vasectomy may be preferred to salpingectomy for an intensive sterilisation programme, there is not much difference between the two from the technical point of view or the convenience of the operated. It is often the fear of its so-called after-effects that make couples shrink from the operation. This has to be remedied by arranging to get these operations done by experienced doctors only, thereby ensuring maximum efficiency. Any after-effects also should be attended to promptly by experts. These precautions will instil confidence in the public and promote the wide-spread adoption of these methods.

(2) **Induced abortion:**

It is Japan which has shown to the world that population control can be achieved through induced

abortion. In fact, induced abortion is perhaps the only proved method which can reduce birth-rate quickly.

But there are certain serious draw backs for this method, the most important among them being the need to resort to repeated abortion. It is usual that women become pregnant within 3 or 4 months after an abortion, so that 2, 3 or 4 abortions will have to be induced in one year to avoid a birth. Abortion can be safely induced only by surgical methods requiring general anaesthesia. And it is not very safe especially when it is repeated. Induced abortion involves destruction of a life and may interfere with popular sentiments also.

A strong case for the legalisation of abortion was put forth in the session. The concensus of opinion was that, couples who wish to induce abortion to avoid a birth should be required to sterilise to avoid the necessity for repeated abortions.

The method of inducing abortion by injecting hypertonic solution into the uterine cavity which will cause the death of foetus while within the uterus and inducing therapeutic abortion have been tried with good results. Since this is a fairly reliable and safe method, detailed research has to be conducted to find out a simple and safe method to induce abortion.

(3) *Non-appliance methods.*

Coitus interruptus and rhythm methods are the most important in this category. Opinion was divided as to the efficiency of these methods.

(4) *Appliance methods.*

In popularising these methods care should be taken to popularise the use of only one or two appliances. Sheath is perhaps the best appliance. Failure rates of these methods are pretty high in the State. It may also be noted that the appliance method is better suited for child-birth-spacing rather than for child-birth-ceiling.

(5) *Oral contraceptives.*

Oral contraceptives have also been developed for avoiding pregnancy and are much in use in western countries. One practical difficulty with this method is the necessity to take the pills regularly for a large number of days. Also, the side-effects of taking these pills have not been completely studied.

(6) *Intra-uterine devices.*

Among these the Margulies 'Spiral and Lippes' loop which appear to be very promissing. Experiments are going on in the Medical College,, Trivandrum wherefrom fairly encouraging results have been reported.

Apart from the primary factors discussed above, some of the secondary factors that influence fertility like the effect of education, urbanisation, change in family organisation, etc. were also examined.

As is well known, the literacy level of Keralites is the highest in India. 55% of males and 39% of females are literate according to the 1961 census. The percentage of women in the child-bearing ages (15—44 years) who are matriculates and above, is 10.1 in the urban areas and 3.1 in the rural areas. Again, the proportion of men in the 20—59 age group who are matriculates and above is 17.3% in the urban areas and 6.0% in the rural areas. Thus, it is seen that the proportion of sufficiently educated persons who are receptive to the family planning idea is small in the State and therefore the effects of education on fertility could not have been large.

Analysis of census data has shown that fertility among urban women are affected perceptibly when they are matriculates or above, or when their husbands have similar education. The reduction in fertility noted is uniform in the case of women at all ages in their reproductive life whereas in the case of men it is perceptible in the later age groups. Fertility begin to diminish among educated women only after about ten years of their married life.

We do not have any evidence to show that educated women in Kerala are less fertile intrinsically.

Their lower completed fertility rate may perhaps be due to their higher age at marriage (The census data have shown that their age at marriage is higher than that of "illiterates" or than of those in the "elementary" group). Their age at marriage is also seen steadily rising with the years. Between 1951 and 1961 it rose by 1.5 years. It may perhaps be this difference in age at marriage between educated women and others with the consequent reduction in the reproductive span, rather than any difference in intrinsic fertility or contraceptive practices which have caused the observed reduction in fertility.

In the study of the fertility pattern of a people, the system of their family organisation is very important. Kerala followed till recently, both the patriarchal and matriarchal systems. The Namboothiris, Christians, Muslims, Brahmins, Parayas, Kammalas, Paravas, Yadavas and Chetties, were following the patriarchal system from olden days. On the other hand the Nairs, Ezhavas, Kshathrias, Ambalavasis, Kuravas, Pulayas, Velans and Vellalans followed till recently the matriarchal system. A few Muslim families followed the marumakkathayam system also. A mixed system of inheritance was also in vogue among a few depressed classes like Cherumans and other hill tribes.

Marumakkathayam system was in force till 1925 after which a series of Marumakkathayam regulations have been enacted which facilitated the disintegration of the tarwad system. Today, the multigenerational joint family system has disintegrated into complex households and is in turn being replaced by nuclear types of households. Old values giving place to new ones and the State has been going through a period of transition in the family organisation.

It is interesting to study the origin and history of the various family organisations that existed in the State and their effects on the fertility pattern of Kerala. A study on these lines is being undertaken by the Demographic Research Centre, Trivandrum.

6. *Economic implications of the growth of population of Kerala.*

The increase of population has many economic implications. On its credit side may be mentioned the increasing returns from larger markets, the benefits of division of labour and specialisation etc., while on its debit side may be mentioned the pressure on land and other resources and consequent reduction in returns, rise in wages, fall in profit and slowing down the pace of accumulation of capital and growth of the economy. Though the increase in population need not thus be a matter of serious concern by itself, its rapid rate of increase in Kerala is posing a serious problem for economic development. If rapid increase of population is to be a boon, then the pre-requisite is adequate capital for development which could not otherwise be spent or poulation increase should stimulate investment of unused capital resources. But in most of the developing countries, the case is different and hence rapid increase of population turns out to be a hindrance to economic development.

In the following paragraphs, the implications of the rapid growth of population of Kerala on its economy are briefly discussed.

The economy of Kerala is predominently agricultural. 85% of the population still live in rural areas where agriculture is the main source of living. An appreciable shift of population from rural areas has not been noticed during any of the last decades. The persistence of the rural nature of settlement among the population is an indicator of the predominance of agriculture in the economy. 49% of the total income of the State in 1955-56 was derived from agriculture and allied activities. This stood at 48% in 1960-61 (at current prices). Against this, the estimates for the industrial sector are only 20% and 18% respectively for the corresponding periods. These facts reveal the snail pace of industrial development and the continuing importance of agriculture in the economy.

The high rate of growth of population in the State unaccompanied by corresponding industrial

growth has naturally increased the pressure on the cultivated land (uncultivated land suitable for cultivation is scarce in the state to resort to extensive cultivation) leading to excessive fragmentation of holdings thereby making them uneconomic. A survey on land holdings conducted in 1956 has shown that 90% of the holdings are less than 5 acres, more than half being less than even one acre. Instances of uneconomic holdings are common.

The per capita land suitable for cultivation was only 27 cents in 1961. The land available for cultivation for an agricultural worker was in turn only 2 acres. This low man-land ratio has contributed to the low per capita income from agriculture in the State, compared to others. While Kerala produced crops worth Rs. 445 in an acre in 1960-61, Madhyapradesh another State in the Indian Union could get only Rs. 106 from an acre. But the per capita income from agriculture in Kerala was Rs. 149 while it was Rs. 151 in Madhyapradesh. Another direct result of the rapid increase of the population is the growing deficit in food grains in the State. The production in the State is sufficient only to meet a little more than 50% of the required quantity of food grains.

It has been estimated that about 20 lakh tons of rice was required annually to feed the population in 1960-61. An additional 2.4 lakh tons will be necessary by 1965-66. By 1970-71 this will go up by 5.3 lakh tons. Since home production has not kept pace with the increase in population, the per capita availability of food grains from home production has gradually decreased. The mounting growth of population, if left unchecked will further worsen the situation.

The rapid increase of population with a high birth rate implies an age pyramid with a heavy base. 41% of the population of the State is below 15 years of age as per the 1961 census. This implies that a substantial share of the State's resources has to be diverted to bring them up, with no immediate benefit to current out put. It is true that investment for human capital formation by way of expenditure on

education, public health etc., is beneficial in the long run. But viewed against this urgency of quick economic development, a lower birth rate and consequent lower dependency would relieve much needed resources to build up physical capital that would greatly enhance the productivity of labour. Further more, in the present state of the economy the investment in consumption goods for the population does not seem to yield commensurate returns. It only helps to swell the ranks of the educated unemployed. The situation is similar to the waste of demographic investment in a community with high fertility and infant mortality rates.

The rapid increase of population has also aggravated the empolyment situation in the State. The annual entrants into the labour force as a result of the population growth are far in excess of job opportunities created, resulting in a continuous inflation of the backlog of unemployed. By the end of the second plan the number of unemployed persons was 6 lakhs. It will be nearly 8½ lakhs at the end of the current plan even if the anticipated number of 5.6 lakhs jobs are created during the plan. One of the results of this increase of jobless persons will be the spill over into the already over crowded residual sectors like agriculture, trade and services, thereby depressing factor-proportions and depressing income.

The large proportion of children and unemployed adults to the total population imposes a heavy burden of dependency on the economy. 67% of the population are non-earning dependents. This is keeping down the level of current output, but also dispose away sizable savings in unproductive consumption.

Since the major component of the regional income is agriculture, where the per capita income is small, the per capita income of the State is also small. At constant prices it was Rs. 254 in 1961. The effect of the population growth was partly responsible for this low figure; while between 1955-56 and 1960-61 the regional income increased by 47% the per capita income increased only by 32%.

The critical factor influencing the growth rate of the economy as a result of population growth is capital formation. As is well known it requires additional investment with increase in population to raise per capita income to a fixed level. With an outlay of Rs. 79 crores or Rs. 80 crores under the second plan, the regional income per capita went up from 232.71 in 1955-56 to 253.93 in 1960-61 which works out to an annual increase of 0.45%. The corresponding rate of increase anticipated is only 0.78% over the 3rd plan period even though more than twice the amount is invested; clearly it is the population variable that intervenes to reduce the growth rate. Thus with increase in population, the magnitude of investment required to raise per capita income becomes larger and larger. At the same time, the supply of investible resources in the State where population has exceeded the optimum numbers tends to shrink. Also the diversion of substantial amounts becomes necessary to duplicate existing facilities like schools, hospitals and other social over heads which drains much needed capital for purposes of investment in productive enterprises.

The deliberations at the session highlighted the necessity to tackle the problems of the State in a co-ordinated way by the economists, demographers and the planners. Immediate attention should be paid for the proper utilisation of the present resources of the State. A sudden fall in population as a result of the family planning programme in the State may not occur in the immediate future. Therefore a spectacular gain in per capita income is also unlikely during the period. It is therefore necessary that all our energies and resources should be harnessed to bring about this desired change in growth of population at an early date.

7. *Concluding session.*

In this session also, the gravity of the population problem was pointed out by the speakers. The necessity for controlling it by family planning was emphasised. Among the various methods, sterilisation was proposed as the best suited one under the

conditions in the State. Since couples can stop unwanted pregnencies by sterilisation, it was felt that this is the one method on which the people can depend and which should be given top-priority.

Though it was conceded by all, that the problem of over population was very grave and needed drastic checks, it was pointed out that it was often exaggerated to cover up social evils which lay at the root of all the troubles. Social evils have to be remedied side by side, for economic progress, viewing them as separate entities. The evil of rapidly growing numbers is entirely different and demands a different approach.

PART II

Inaugural Session

A. *Welcome Address.*

Sri N. Gopalakrishnan Nair,
Additional Director,
Bureau of Economics & Statistics.

Honourable Ministers, Distinguished guests and Friends;

It is my very pleasant privilege, this morning, to extend to you a hearty welcome to the "Seminar on the Implications of the present groth of Population in Kerala".

This narrow strip of land, stretching for 366 miles along the coast from Kulathur in the South to Kunjathur in the North with a total area of 9.6 million acres and with 18 million human beings, is probably the densest part of the world excluding of course the large metropolitan congregations. And we are still increasing in numbers at the rate of about 2.2% per annum or at the rate of 1100 persons per day. The object of this Seminar is to discuss the economic and social implications of this growth of population in Kerala.

I am not unaware of the existence of learned people who are anti-Malthusian in outlook and believe in the philosophy of "the more, the merrier". But certainly a very substantial section of the thinking people holds a different view.

According to this view the main cause of our major economic ills, low income, low consumption levels and high unemployment is this excessive pressure of population in the State. This population effect is brought out very clearly in the case of the per capita income from agriculture. Our soil is fertile and we have many valuable cash crops. Consequently the productivity per acre in Kerala is very high. While Kerala produced crops worth Rs. 445 in an acre in 1960-61, Madhya Pradesh could get only Rs. 106 from an acre. But the per capita income from agriculture, in Kerala was Rs. 149 while it was Rs. 151 in Madhya Pradesh.

If we divide the entire geographical area of Kerala on a *per capita* basis today, each person is entitled to get as his share an area of 53 cents. Out of this, only 27 cents are under cultivation. Seven cents are paddy fields of which four are double croped so that the gross area under rice per person is 11 cents. From these 11 cents 130 lbs. of rice are available for consumption every year. At the rate of 12 ozs. per day this is sufficient barely for six months. And it is well known that there is practically very little scope for increasing the paddy area in the State.

One of the direct results of this combination of fast growing population and a limited supply of cultivable land is that every year our per capita land is reduced by about 1.3 cents. Added to this, out of our precious small cents, bits are eaten away every year by the merciless Arabian Sea.

How old is this notorious food deficiency of Kerala. According to Shri V. Nagam Aiya, Kerala is atleast 6500 years old. We do not have authentic records to estimate the population of Kerala in those remote days. But there are scattered evidences to show that at the beginning of the 17th century the population of Kerala was about 30 lakhs. In the next two hundred and fifty years the population increased only by about 50% so that in 1850, it was about 45 lakhs. Even assuming that the area under paddy and the average yield per acre were much less than what they are today, there was no question of any deficiency in rice production in those days when the population was only one-fourth of today's population or even less. Import and export statistics, reveal that up to 1864 the State was exporting rice. Imports started only in 1865. This shows that the food deficiency in the State is only 100 years old. And it is quite appropriate that we should hold this Seminar in 1964 which is the centenary of the end of self sufficiency in food production in Kerala.

What are the factors responsible for this abnormal pressure of population in Kerala? Are our women excessively fertile? The fact is that the Kerala

woman is not more fertile than her sisters in the other States of India or for that matter in most of the other countries of the world. The most outstanding reasons for the phenomenal increase in the population of the State, especially during the last 40 years, appears to be the remarkable fall in our death rate. It is certainly gratifying that Kerala has the lowest death rate among all the States in India. But the blessing has turned out to be not an unmixed one. When we fought and overcame epedimics and famines, the so called mass killers, we were also destroying Nature's own devices of population control. All our efforts in the last few decades in the fields of public health and social welfare were primarily aimed at postponing death. Unfortunately a similar emphasis was not laid in the matter of reducing births. The result was the amazing speed with which the population multiplied.

It is time that we shift some of the emphasis from death control to birth control and in this we have a lot of arrears of efforts to clear.

I welcome you all to this Seminar once again.

B. *Inaugural Address.*

Sri K. A. Damodara Menon,
Minister for Finance and Industry.

Friends,

It is really a pleasure for me to be present here today to inaugurate the two day Seminar on the "Implications of the present growth of population of Kerala". As everybody agrees, the population problem has become very acute in our State. It is therefore most opportune to have adopted this as the subject of discussion for this Seminar. I hope that the discussions here will help to clarify matters and enlighten us on the points where action is most needed to control the problem.

The 1961 Census has revealed that our population is growing at an average annual rate of nearly 2.5%. This means that the State has to accommodate about 3.5 lakhs persons additionally every year. This continuous annual additions to the population which seems to grow with the years is pressing hard against the available resources of the State. The consequences of this increasing pressure of population are too obvious. Apart from finding food, shelter and clothing for them, the needs of the growing population in the matter of education, public health and other social over heads have also to be met. We are now producing a little over half our requirements of rice and the rest have to be imported and the increase in population is continually inflating our import bill. The cost incurred for education comes to almost a third of the annual budgeted amount and every succeeding year we have to find out more and more money to meet the cost of education of the expanding population. In this way one can go on enumerating various other items which call for unavoidable expenditure required as a result of the growth of population. The strain on the financial resources of the State is thus increasing with every coming year with a consequent dampening in the tempo of economic development. It is therefore high time to cry a halt to the mounting growth of population. The acute problem of unemployment, the slow growth rate in the per capita income incommensurate with the growth in the regional income and many other problems that we face today can all be remedied to a large extent by population control. It is this realisation that has prompted the planning commission and the Government of India to place special empahsis on population control. The current and the earlier plans include schemes in this regard.

The experts in the field agreed that the present rapid growth of population is caused by the natural increase due to the continuance of a fairly high birth rate in the face of a decreasing death rate in the State. Therefore, it is obvious that the control of population in the State can be achieved only by controlling births.

A policy of limiting the growth of population by effecting a reduction in birth rate through birth control method has been adopted by our Government. But in a matter like birth control and family limitation affecting the social, religious and familial conditions of the various communities, success can come only slowly unless a vigorous campaign to educate the people on the need for family planning and family limitation and motivating them is pushed through. A favourable out look should be brought about in this regard before popularising specific methods which can bring about the desired success of the programme. After all in a democratic society like ours people cannot be compelled to acquiesce but only persuaded to agree. There is no time to lose as the problem is already very acute and is only aggravated with every passing minute. Therefore this part of the job, namely the education and motivation of people have to be pushed through with all haste.

It is heartening to know in this context that the family planning idea has gained acceptance among large sections of the people of this State. Our people are not generally found to be resistant to the idea if they are approached in the right way. Large sections of the people who were traditionally averse to the programme have, of late, shown signs of relaxing their outlook. Even the Christian Church, it is learnt is reconsidering its old attitude, in favour of family planning. These are signs which portend good to the success of the family planning programme in the State. With improvements in education, living standards, urbanisation, industrialisation etc., the position is likely to improve still further. But there is no time to wait for events to work out for themselves and bring out the desired change. A very vigorous and earnest attempt has therefore to be made without any delay to hasten the process of this demographic change. I am very glad to find that many eminent persons from all parts of India have come here to partake in the discussion of this subject which is very crucial as far as our country is concerned. I wish the seminar all success.

With these few words I inaugurate this Seminar.

C. *Presidential Address.*

M. P. Govindan Nair, Minister for Public Health.

Mr. Damodara Menon, Ladies and Gentlemen!

I deem it an honour to have been asked to preside over the inaugural session of this Seminar on the implications of the present growth of population of Kerala. Eversince we adopted economic planning on a massive scale, the chief obstacle that stood in the way of an all round economic development has been the unregulated growth of population which in recent times have assumed serious proportions. This is because we in India do not consider population growth as a mere addition to the resources; we feel that the consummation of all the plans and programmes is to enrich and enlarge human welfare and population control should therefore subserve this end.

The lag and lapses in Indian Planning we find are greatly due to the exhorbitent growth of population which tend to nullify whatever gains we achieve in the economic front. Even from the point of view of an individual, an increase in the number of mouths to feed, adversely affects his rising economic status. "Too many people" is a cry that is often heard from the platforms and the press.

As you well know, Kerala has the highest density of population in the country with 1127 persons per square mile as against 373 for all India. Again in regard to the growth of population of Kerala from 1901 to 1961 the population has nearly trebled. The State is hardly in a position to meet half of the food requirements of its population from within its internal sources. This perhaps need not present a serious problem, had the State been industrially advanced. At the same time in the sphere of social services, for example in health and education, we have made much leeway than other States. These services, we should remember, have been enlarged with the resources made available from the State's exchequer. This growing gulf between the limited resources on

the one hand and the increasing expenditure necessary for the social overheads of the ever expanding population on the other is sufficiently alarming to be lightly cast aside. The only panacea in these circumstances, it is obvious, is to adopt measures to control this excessive growth of population. Our success in this direction till now is not significant because of the magnitude of the issue and also of the limited and feeble attempts that have been made to tackle this grave problem. It is therefore fitting that such a seminar like yours, is held here to evaluate and analyse the implications of the problem. You, as experts, would be able to point out the steps that are to be taken to check this undue growth—a problem that has practical importance to the planner, politician and the public.

We have embarked on bold programmes of national reconstruction; a substantial increase in per capita income during the IV Plan and the ensuing ones are envisaged. All these could be attained only if we concentrate seriously on introducing family planning programmes throughout the country. In a society like that of ours there are many impediments which stand in the way of launching mass family planning programmes. Superstitions, taboos and ignorance, all of them hinder the pursuit of measures to control population. Our basic effort should be to make the general public aware of the serious consequences of unplanned increase of population. Perhaps, as demographers, you may not directly be concerned with the actual implementation of family planning programmes. Nevertheless, you may be able to tell the men in the field how best they could achieve the end of fulfilling the targets. The vehicles of communication should run faster and the machinery made smoother.

It is heartening to note that the walls of prejudices against family planning are fast crumbling and the people are realising the imperative need of restricted family. The church which had hitherto staunchly opposed any method that would limit the human race is now engaged in reconsidering its basic attitude. While this is a trend to be welcomed, it is

necessary that we develop fool-proof measures other than those which are in vogue. This calls for considerable research on the part of the scientists to continuously engage themselves in finding out new processes of arresting the population growth. It is evident that in a developing economy increasing attention is to be devoted to this major problem.

There is another aspect of birth control programmes about which I would like to say a few words. Economic development and population growth are interdependent, though it may not be correct to say that one depends entirely on the other. Population growth has been found to be influenced by economic development. This, means that as the standard of living of the people improve, as more and more women take to jobs, a slow psychological transformation takes place and people feel more and more the advantages of the small family. Organised propaganda work for the popularisation of family planning techniques may not be then necessary. But in our context, I believe that propaganda is by far the most important. All the research which demographers and medical scientists do in the field of family planning can provide full benefit, only if such ideas are propagated to the people. I would like to stress the need for more intense activity in the field of family planning communication research. These efforts are necessary not only in the interests of the present generation but also of posterity.

I am sure your deliberations will be fruitful and I wish the Seminar every success.

D. *Vote of Thanks.*

Dr. R. S. Kurup, Deputy Director, Bureau of Economics and Statistics, Trivandrum.

Mr. Damodara Menon, Honourable Minister for Finance,

Mr. Chairman, Ladies and Gentlemen,

My task here is to express our heartfelt thanks to all those who have assembled here. As you know,

we are here to discuss the implications of the present growth of poulation of Kerala especially, the social, medical and economic implications. In this context, it is worthwhile to remember that the Demographic Research Centre started functioning in the Department of Statistics of the Government of Kerala in August 1958 and we have just passed 6 years of its life. During this period, a total of 26 papers and reports have been brought out by this Centre, covering demography, family planning and other fields. This is one of the 5 Centres in the country, the others being situated at Bombay, Delhi, Calcutta and Dharwar.

I am thankful to the Government of India and to the Government of Kerala for locating the Centre in the Department of Statistics and for sanctioning the present seminar. The importance of this seminar in the present era of planning and development needs no emphasis, and we have received 22 papers for the seminar which have been categorised into three: those dealing with the demographic characteristics of the population, social and medical implications and economic implications.

The Honourable Minister of Finance Sri Damodara Menon has made a very illuminating speech on the population problem. Sir, I extend to you my heartfelt thanks on behalf of the Bureau of Economics and Statistics. The Honourable Minister for Public Health has drawn our attention to the various aspects of the population probelm. Sir, I extend to you my sincere thanks. I am also thankful to the renowned demographers who have taken pains to come over here, present papers and partake in the discussion especially Dr. C. Chandrasekharan, Dr. C. O. Karunakaran and Dr. B. Natarajan who have accepted the chairmanship of the technical sessions.

Also I extend my thanks to all those who have accepted our invitation and are here to make this function success.

Thank you.

PART III

Demographic Characteristics of the Population of Kerala

A. *Chairman's Address*

Dr. C. Chandrasekharan, Director, Demographic Training and Research Centre, Bombay.

Friends,

A scientific approach to demographic problems is needed if we are to succeed in tackling the problem of population growth. An assessment of the past demographic trends will be highly fruitful in the context of launching future programmes. I am happy to note that the Planning Commission has been aware of the importance of such investigations and is giving encouragement to the growth of demographic studies in this country. Growing recognition is being given also to the importance of regional studies in demography.

The two day Seminar on the Implications of the present growth of population in Kerala organised by the Demographic Research Centre, Trivandrum is a step in this latter direction. It has brought to the State capital a number of distinguished demographers from other Demoghaphic Research Centres and Research Institutions in the country. 22 Technical papers have been submitted to the Seminar, which is organised in three sessions; the first dealing with demographic characteristics of the population of Kerala, the second the social and medical implications of the growth of population of Kerala and the third with the economic implications of the growth of population of Kerala.

Kerala the smallest State in India with a total area of about 9½ million acres has a population of 17 million and is the densest part of India excluding the large metropolitan congregations. The density according to the 1961 census was 1127 persons per square mile. Even at the beginning of the century, Kerala recorded a density of 434 persons per square mile which is higher than the density of population

in the whole of India at the present time. The rate of population growth during the past decades has accelerated. During the decade 1951-60 Kerala's population increased by 25 per cent. How Kerala State succeeded in sustaining such a large population over the past several decades and what the implications of the present rapid growth of population are for the future of the State and the country at large are problems deserving discussions at the Seminar.

Kerala's fast rate of growth is primarily due to a low level in death rate. It is not due to a high birth rate. The average age at marriage of women at the present time in Kerala is about 20 years and is far higher than the average of 16 years for the whole of India. This higher age at marriage has however not resulted in the lessening of the fertility of the women in the State as compared with other regions in the country. While women in other States with younger age at marriage complete their reproductive life in the early 30's the Kerala women have high fertility even upto 40 years of age. Such a feature inspite of a higher literacy rate has been a cause of concern for the Kerala Government which along with other States of the Country has launched a wide Family Planning Programme.

The number of family planning clinics in Kerala was only 10 in the year 1955. But now the number has increased to 351. It is encouraging to note that 20 clinics are also run by Private Institutions. The sterilisation programme has been given high priority and about 37,000 sterilisations have been conducted in the State till the end of March, 1964. The need for preserving the efforts to promote fertility control is obvious when it is realised that the birth rate still stands as high as about 40 per thousand persons.

Fertility control is the priority one problem of the State. Demographic Studies of attitudes and motivations affecting acceptance of family planning practices will help to mitigate the population problems of the State and to increase the well being of the State's population.

B. Technical papers presented

1. *Characteristics of the Population and Targets of Control.*

By

Dr. R. S. Kurup, Deputy Director, Bureau of Economics and Statistics, Trivandrum.

1. INTRODUCTION

In this paper, population growth in Kerala and its effect on food and agriculture, education, employment and income will be discussed. A digest of the existing information on family planning attitude, knowledge and practices is also presented. Following R. A. Gopalaswami, a child birth ceiling of 3 is suggested and target birth rates for the coming five year plans are suggested[1]. Sterilisation is considered as the principal method of achieving the target. The financial implications of the scheme for achieving the target are also indicated.

2. POPULATION GROWTH

The State of Kerala which is the smallest in India in area has the highest density of population. The percentage variation in population followed an increasing trend from 1901 onwards except for two breaks, one between 1911 and 1921 and the other between 1931 and 1941 which decades witnessed a slightly lower growth compared to the preceding decades. The 'Great Divide' that 1921 has been for India as a whole is seen to be true for Kerala also. Table I gives the population of Kerala and India, the decennial percentage variations and the geometric rates of increase from 1901 onwards.

It is seen that nearly 25% increase is registered in Kerala during 1951-61 as against 21.5% in India as a whole. Compared to other States in India, the variation in Kerala has been less—less than in Assam, West Bengal, Gujarat, Rajasthan and Punjab.

---

1 Gopalaswami, R. A., "Planned development and population growth", Working Paper No. 4, Institute of Applied Manpower Research, New Delhi, November 1963, P 57.

But during 1941-51 Kerala topped the list with 23% increase. It is noteworthy that compared to 1941-51 the decennial variation in 1951-61 is higher only by 8.5%. This again is because of the fact that the State had a very high total population even during the initial decades and whatever changes that might occur can only be small in comparison with the base which is already large. This is clear from the fact that the density in Kerala was 426 per square mile in 1901 which is higher than the 1961 density of India and of most of the States. Only West Bengal, Bihar, Madras, Uttar Pradesh and Punjab have densities above 426 in 1961 while the density of population in Kerala in 1961 is 1127, nearly 3 times the density in 1901.

Table 1. Growth of Population of India and Kerala from 1901-1961*

	India			*Kerala*			
Year	*Population in lakhs*	*Decennial percentage variation*	*Geometric rate of growth of population (percentage)*	*Population in lakhs*	*Decennial percentage variation*	*Geometric rate of growth of population percentage*	*Kerala population as % to Indian population*
1901	2362.81	5.73	0.65	63.96	11.75	1.19	2.71
1911	2521.22	—0.31	—0.33	71.48	9.16	0.90	2.84
1921	2513.52	11.01	1.05	78.02	21.85	1.98	3.10
1931	2790.15	14.22	1.34	95.07	16.04	1.50	3.41
1941	3187.01	19.31	1.26	110.32	22.82	2.08	3.46
1951	3611.30	21.50	1.98	135.49	24.76	2.24	3.75
1961	4392.35	..	..	169.04	..	..	3.85

*Source: Registrar General of India, Final Population Totals, Census of India Paper No. 1, Manager of Publications, Delhi, 1962.

It may be remarked here that while the Indian Population has not yet doubled during the course of the 60 years ending 1961, the population of Kerala doubled even before 1951. It is also seen that there has been a doubling of the 1921 population in the fifties. The enormous increase in the population of Kerala is thus evident.

Now turning our attention to the geometric rate of increase, it is seen that the annual rate is 2.24% in Kerala during 1951-61 against 1.98% for All India. Brazil (3.4), Equador (3.2), Venezuala (4.3),

Taiwan (3.6), Malaya (3.0), Israel (3.6) and Vietnam (5.4) are some of the countries of the world with very high rates of growth. Compared to these, the rate in Kerala is low but as already said, the State has a large base population in a small area and hence the population problem is more acute here.

The growth of population in Kerala has been tremendous as can be seen also from the fact that Kerala population which was 2.7 per cent of Indian population has increased to 3.9 per cent from 1901 to 1961.

3. FOOD AND AGRICULTURE

Rice is the staple item of food of the people of Kerala. There is always a deficiency of rice in the State. The fate of the people depends on the regularity of the monsoons. The deficit is made up by importing rice from adjoining States and by the Central allotment of rice.

During 1961-62, 9,88,150 tons of rice have been produced in the State while in 1962-63 the production stood at 10,75,994 tons.[2] The requirement of rice at the rate of 14 oz. per adult per day during 1962-63 is nearly 20 lakh tons. Only a little above 50% of the requirement is produced in the State. The rate of increase in 1962-63 based on 1961-62 [3] is 9 per cent but there has been an increase of 7 per cent in area with the result that the net increase in production is only about 2% which is less than the rate of increase of population. There would, as a result, be an increase in the deficit if the present rate of population growth continues. Also, the rate of increase of production cannot go on at 2 per cent in future. The case of rice alone is taken here to indicate the consequences of the growth of population on the food situation in the State.

Turning to the agricultural sector as a whole it is seen that the net area sown as well as the total

---

2 Bureau of Economics and Statistics, *Economic Review* 1963, Superintendent of Government Press, Trivandrum, 1964.

3 The year 1961-62 actually experienced a fall in production of rice compared to the previous years.

cropped area has been increasing steadily from 1958-59 onwards with a corresponding fall in the area of cultivable waste, fallow land, and land reported as barren and uncultivable waste. The net area sown has recorded an increase of 4 per cent in 1962-63 compared to 1961-62. The percentage increase in the total cropped area over the year has been higher at 4.5 which implies an increase in the area sown more than once as well. It may be remarked here that the year 1961-62 was a bad year as regards agricultural production in the State.

The net result is that there is not much scope for expansion of area under crops in the coming years. The only way for increase in yield is by increasing the average yield by application of manures, irrigation, use of good quality seed etc. With the need for increased production, these improved methods will be made use of. At the present rate of increase of population, the time is not far when the resources in the State will not be able to meet the increasing demand of the population.

4. EDUCATION [4]

A keen awakening is observed among the developing countries of the world in the matter of giving education to the children. Kerala, which stands foremost among the States in India as regards literacy, has 55 per cent of males and 39 per cent females literate. In 1963-64, Rs. 19.46 crores have been spent on school education, Rs. 1.37 crores on University education other than technical and Rs. 0.66 crores on technical education. The per capita expenditure was Rs. 11.23, during 1962-63 as against Rs. 6.36 in 1957-58.

There were 36.22 lakhs of students in schools in Kerala in 1962-63 against 28.42 lakhs in 1957-58, an increase of 28 per cent during the 5 years. The 55 colleges in the State took 46,375 students for general education in 1962-63. The 33 institutions for professional education enrolled 8,157 students.

4 All figures taken from Government of Kerala, Economic Review, 1963 Superintendent of Government Press, Trivandrum, 1964.

With the increasing population, the need for educational services also increases. Considering the birth-rate of nearly 40 per 1000, the number of children born in an year will be 7.2 lakhs (taking the population as 180.7 lakhs in 1964). Assuming that nearly 50 out of 1000 will die before attaining the 5th year of life, the remaining 6.48 lakhs will have to be educated if 100% schooling is desired. Thus in 1970, 6.48 lakhs of students should be admitted fresh to the first standard.

According to latest published figures, in 1962-63 there were 6.57 lakhs of students in the first standard Assuming that 5 per cent of the students of first standard are those that failed in the examination during the previous year, .33 lakhs of students also have to be given place. Thus there should be provision for 6.81 lakhs of students in all. The expenditure on this account will be enormous. Now considering the future of this student population, there will be at each stage, a huge expenditure to be met with; new high schools, colleges etc. are to be opened both for professional and technical education.

5. EMPLOYMENT

According to 1961 census, the total number of persons employed (workers) is 56 lakhs. The number of unemployed persons is 7.8 lakhs in 1961 according to 1961 census and 6.3 lakhs in 1956 according to an unemployment survey conducted by the Department of Statistics, Trivandrum. The difference of 1.5 lakhs is due to the excess of persons entering the labour force due to the rapid population growth in spite of the employment opportunities provided during the Second Plan, by which about 4 lakhs of persons were additionally employed. At the end of the third plan, the total number of unemployed persons will be nearly 9.3 lakhs, if the addition to the number of unemployed persons during 1961-66 is assumed to be the same as that during 1956-61 namely 1.5 lakhs. If we assume that the present rate of growth of population continues, the average annual increase in population during the Fourth Plan period

will be nearly 45.5 lakhs with a base population of nearly 190 lakhs at the beginning. Thus during the Fourth Plan, the increase in population will be nearly 22.5 lakhs. If the labour force participation rate is 35 per cent which is a little higher than the rate obtained through employment surveys (33 per cent nearly) the number of persons entering the labour force during the Fourth Plan period will be nearly 8 lakhs. Thus employment opportunities are to be created for 17.3 lakhs of persons during the Fourth Plan period. Even if 3.3 lakhs of women, at the rate of one per household roughly, do not want to be in the labour force and may remain as house-wives, to help the present house-wives, 14 lakhs of persons are to be given employment. This is a stupendous task and can be met only by stages and at a large investment.

6. REGIONAL INCOME

The regional income of Kerala increased from 349.90 crores of rupees in 1955-56 to 515.32 crores of rupees in 1960-61 thus increasing by 47 per cent during 5 years (at current prices) while the per capita income increased only by 32 per cent according to estimates published by the Department of Statistics, Trivandrum. The reduction of nearly 1|3 is brought about by the increase in population. The sectoral break-up of the regional income shows that agriculture and allied activities accounted for 49 per cent in 1955-56. At constant prices the percentage stood at 48 in 1960-61. In the industrial sector the corresponding shares are 20 and 18 per cent respectively. This shows the slow growth of the industrial sector. The services sector has shown an increase from 31 to 34 per cent, the increase being in professional and domestic services and service under public authorities.

7. FAMILY PLANNING—ATTITUDE, KNOWLEDGE AND PRACTICE

The need for adopting family planning is clear from the foregoing discussion. Let us ascertain the level of attitude, knowledge and practice of family planning.

There were 10 family planning clinics in Kerala towards the close of 1955. By June 1960 there were 81 family planning centres including 17 aided private centres. Towards the close of 1963 there were 240 clinics in the State, attached to various hospitals, primary health centres and M.C.H. Centres. District and local committees are formed for advising the clinics. Contraceptives are distributed at subsidised rates or free of cost. Facilities for sterilisation are provided in all major hospitals in the State.

Looking into the information on family planning attitude, surveys conducted by the Demographic Research Centre, Trivandrum form the only source of information. A survey on attitude to family planning was conducted by the centre in the 9 District headquarter towns and in Attingal town in 1959-60. Subsequently a survey was conducted in the village of Sreekaryam near the capital City of Trivandrum. It was seen that in the towns the percentages of husbands and wives who prefer to have 4 or less children are almost the same. In Kozhikode, information was not available from most of the couples. Those couples, who prefer to have 4 or less children and wish to have a reasonable spacing, may be considered as favouring family planning. An interval of less than 2 years between children was preferred only by a small percentage of couples. In Ernakulam and Palghat towns, about 40 per cent of couples, preferred to have 4 or less children while in Trichur, Cannanore and Attingal towns 50 per cent were in this category. Nearly 60 per cent were favourable to family planning in Quilon town and more than 60 per cent in Trivandrum, Alleppey and Kottayam. The differences in literacy-standard and social or cultural differences are responsible for the differences between towns. In centres, where a small percentage favoured small families, a large percentage declined to answer the question. Higher income groups had more favourable attitude to family planning than lower income groups. This again can be correlated with the higher educational status as the persons in the higher income groups have generally more education than those in the lower ones. In Sreekaryam village, where the survey was conducted in

the year 1961-62, the percentage was higher in regard to favourable attitude to family planning.

The level of knowledge about family planning is very poor in the towns surveyed. Except in Quilon, Kottayam and Attingal towns, the percentage of husbands who have sufficiently good knowledge of family planning is between 5 and 10 per cent only. In Quilon, the percentage stood at 34, in Kottayam 25 and in Attingal 51. Here again persons in the higher income groups have more knowledge about family planning. In a recent survey in Sreekaryam village it was observed that 74 per cent of males and 31 per cent of females who were currently married were aware of family planning methods. Bearing in mind that the village is very near Trivandrum city, it may be concluded that between 1959 and 1961 the propaganda activities for family planning gained momentum very rapidly.

Turning to practice of methods the information on this question was not available from a large number of couples. The safe period method was the most frequently practised method in all centres except Kottayam and Kozhikode. In Kottayam the method of 'elementary precautions' was most frequently practised while spermicidal method was the most popular method in Kozhikode. Among those who practised any method, only 26 per cent practised spermicidal method in Kozhikode while 16 per cent practised safe period method and 19 per cent the method of elementary precautions. The most common reasons for not practising family planning with couples in towns except Palghat are reasons other than lack of effectiveness, trouble in application, deleterious effect on health or fecundity or interference with enjoyment. In Palghat, the reason stated, is that the couples cannot afford to practise family planning methods.

A study of persons who visited the family planning clinics made in 1961 by the Demographic Research Centre revealed that out of 5885 couples, 71.8 per cent were Hindus, 17.6 per cent Christians, and 10.5 per cent Muslims. Compared to the distribution of the total population according to religion,

it is seen that the proportion of Christians among those visiting the clinics is greater and the proportion of Muslims is less than that in the general population.

Another interesting point revealed by the study is that males above 30 years and females above 25 years form the major part of the visitors. Also couples with less than 5 years' marriage duration very rarely visited the clinics, as also those with 4 or less children. It was seen that though some couples practised the methods, they discontinued after some time.

From the above information, the necessity to motivate sections of the people other than those who were already motivated is clear.* Among those who practised, the pregnancy rate were found to be higher here than those found in other countries. For example, 'diaphram and jelly' had a pregnancy rate of 24.2 per 100 years of exposure while Whelpton and Kiser found a rate 4 in Indianapolis during 1927—42. This shows that even those who practised the method did not do it with proper care. Concerted attention is necessary in this direction also.

In this connection, it may be remarked here that sterilisation which is devoid of all defects and is cent per cent successful is attracting the attention of the couples, as revealed by the number sterilised. Upto March 1962, 18,752 persons (11,824 males and 6,128 females) have undergone sterilisation operation. Studies made by the Demographic Research Centre, Trivandrum in 1961 and 1963 revealed that mainly males in 35-39 age group and females in 30-34 age group come for sterilisation. Muslims are reluctant to adopt this method. Also illiterate persons and those who are just literate resort to this method more than others. A large number of persons in the low income groups adopt this method probably because of the financial incentive provided. About 5000 sterilisations are performed in an year. Considering the size of the population of Kerala and its high rate of growth, this is too small a number. In the following paragraphs, the number of sterilisations to be

performed in the State in an year so as to bring down the birth rate to a 'low rate' in the coming years is worked out together with the financial implications of the scheme.

8. TARGET BIRTH RATES IN THE COMING FIVE YEAR PLANS

Stratifying the countries in the world according to birth rates into 'very low', 'low', 'medium' and 'high', R. A. Gopalaswami in his working paper cited (vide page 21) included the European countries except Finland, Poland, Yugoslavia, Bulgaria and Netherlands in the first stratum together with Japan having a rate less than 20 per 1000. In the second stratum Finland, Bulgaria, Netherlands and Australia are included with rates between 20 and 25. U.S.A., Poland, Yugoslavia and Canada are included in the third stratum and Chile and India in the fourth stratum with rates above 30.

The national birth control targets suggested in the working paper for the successive five year plans are given below:

Five Year Plan.	*Birth rate grading.*
Fourth Plan	High birth rate
Fifth Plan	Medium birth rate
Sixth Plan	Low birth rate
Seventh Plan	Very low birth rate

Thus the suggestion is to reduce the birth rate from about forty per 1000 in the Fourth Plan to below 20 per 1000 in the 7th Plan. In other words, a reduction of 50% in 10 years is envisaged.

9. HOW TO ACHIEVE THE TARGET

Two alternative methods for achieving the target are suggested herein. One is by sterilisation alone and the other by sterilisation among the low income groups (with Rs. 200 or below per month) leaving the others to practise the methods they like. For the low income classes, the best method is sterilisation, as they cannot use with advantage the other methods because of cost, lack of conveniences for storing and inability to be careful in use and non-availability of

contraceptives as and when required. If the 'child-birth-ceiling' is fixed as 3, the number of sterilisations to be done for all income classes in the State is 7.6 lakhs based on 1961 census data. This works out to between 4 and 5 per 1000 population. The target fixed for India as a whole in the working paper by R. A. Gopalaswami is also 5 per 1000.

If the lower income groups alone take to sterilisation, there will be a reduction of 40 per cent in birth rate, if nearly 50,000 (51,680) sterilisations are performed in an year. The remaining 10 per cent reduction is to be achieved by the higher income groups who may resort to any method of family planning. The calculation is based on the fact that 68 per cent of persons are in the lower income groups. Thus between 4 and 5 per 1000 of persons in the lower income groups who have 3 children or more should be sterilised in the next 10 years for attaining the target. Here it should be noted that the calculations are based on the ceiling of 3 children per couple and as such all those who have 3 children or more should be sterilised before the next issue.

10. FINANCIAL IMPLICATIONS

Considering the two schemes together, the financial implications are worked out here. For the higher income group no expenditure is envisaged in this scheme, as the facilities provided for lower income groups for sterilisation can be put to their use also.

Persons in the lower income groups who undergo sterilisation should be given one week's leave with pay. The social workers should bestow more attention towards dissemination of information on family planning and to bring motivated persons to clinics or hospitals for sterilisation. For this, it is suggested that the social workers may be given a scale of pay of Rs. 35-80 p.m. instead of their present allowance. Another suggestion is to provide for a Doctor's allowance at the rate of Rs. 10 per sterilisation.

The cost of the above will work out to Rs. 18.36 lakhs per year. During one 5 year plan period the cost will be nearly a crore. If the State is prepared

to spend so much on sterilisation and if the social workers work efficiently there will be enough returns in the coming years and the targets suggested will be achieved. It may be noted here that overhead costs which are at present incurred in hospitals and clinics are not included here.

11. CONCLUSION

In conclusion, it may be said, that in view of the lack of awareness of family planning, steps have to be taken to propogate the ideas to the people by intensive work by the social workers. Sterilisation is the best method of family planning at least for the low income groups and it is suggested that all the couples in the low income groups, with 3 or more children should be sterilised in the next 10 years. The target works out to between 4 and 5 per 1000 population. It is suggested that sterilised persons and the doctors may be given incentives. The social workers may be given a scale of pay rather than the present honorarium. The cost of the scheme for a five year period works out to less than a crore only for these suggested items.

Adopting a welfare approach to the problem, it is suggested to make a thorough medical and psychological check up of the patients before sterilisation and follow them up at fixed intervals after sterilisation. This will be useful in studying the side effects of this operation if any and dispel any fears in the minds of the people and thus give momentum to the programme.

2. *A study on the Fertility-variation between Kerala and her neighbours*

By

Nitai Chandra Das,

Indian Statistical Institute.

1. During the census decade 1951-61 the geometric growth rate in the country (India) observed to be 1.97 per cent per annum. The increase is not uniform over the different States of the country. The growth

rate during 1951-61 was highest in Assam and was of the order of 3 per cent per annum while that, on the other extreme, in Madras and Jammu & Kashmir was of the order of 1.13 and 0.9 per cent per annum respectively. The distribution of the districts by 1951-61 decennial variation is given in Table 1.

Table 1. Distribution of districts by 1951-61 decennial variation

State	*decennial variation*				
	Upto 10%	10-20%	21-30%	*above* 30%	*Total no. of districts*
(1)	(2)	(3)	(4)	(5)	(6)
Andhra Pradesh	..	1	4	6	11
Assam	..	12	3	2	17
Bihar	2	14	3	1	20
Gujarat	..	..	12	5	17
Jammu & Kashmir	6	3	..	..	9
Kerala	..	3	3	3	9
Madhya Pradesh	..	3	36	4	43
Madras	5	5	2	1	13
Maharashtra	1	8	17	..	26
Mysore	..	10	5	9	19
Orissa	..	8	4	1	13
Punjab	1	6	6	7	19
Rajasthan	..	3	18	5	26
Uttar Pradesh	3	42	8	1	54
West Bengal	..	1	4	11	16
All states	18	119	125	50	312

Source: Census of India 1961: Paper No. 1 of 1962.

2. In this paper the variation and pattern of fertility, fertility being one of the major components of population growth, of the three neighbouring States of Madras, Kerala and Mysore constituting the southern-most part of the Indian peninsula, these three States showing contrasting features regarding literacy and urbanisation and intra-state birth rate, will be examined. The proportion of 1961 census urban population in Madras, Kerala and Mysore was nearly 27, 15 and 22 per cent respectively. Although Kerala is less urbanised as compared to the neighbouring States Madras and Mysore, she is more advanced as regards literacy than those neighbouring

States, the rate of literacy per 100, 1961 population in Kerala, Madras and Mysore being 47, 31 and 25 per cent respectively.

3. Table (2) shows the rates per 1000 persons of birth, death and natural growth (birth-death) by region for the States of Madras, Kerala and Mysore. Kerala has been treated as a coastal region. It may be observed that the birth rate in the east coast is much lower than the west coast constituted by the State of Kerala and the coastal region of Mysore. It may also be seen that there is no variation in birth rate between coast and inland in the State of Madras, but the State of Mysore shows some variation in birth rate between inland and coastal regions.

Table (2): Rate per 1000 persons for births, deaths, natural growth from two interpenetrating samples for the states of Madras, Kerala and Mysore: NSS 14th round, rural.

State	Region	birth			death		
		sample 1	sample 2	combined	sample 1	sample 2	combined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Madras	coastal	35.8	33.6	34.7	15.2	13.8	14.5
	inland	33.0	35.1	34.2	11.8	13.9	13.0
	all	34.9	34.2	43.6	14.1	13.8	14.0
Kerala		45.3	34.8	39.6	13.0	10.3	11.5
Mysore	coastal	41.7	41.2	41.4	16.9	15.0	15.9
	inland	38.6	40.4	39.5	13.3	17.4	15.2
	all	39.9	40.8	40.4	14.8	16.2	15.5

State	Region	natural growth			no. of sample villages
		sample 1	sample 2	combined	
(1)	(2)	(9)	(10)	(11)	(12)
Madras	coastal	20.6	19.8	20.2	96
	inland	21.2	21.2	21.2	84
	all	20.8	20.4	20.6	18
Kerala		32.3	24.5	28.1	72
Mysore	coastal	24.8	26.2	25.5	53
	inlanf	25.3	23.0	24.3	76
	all	25.1	24.6	24.9	120

Madras	coastal	Kanyakumari, Tirunelveli, Ramanathapuram, Tanjore, Tiruchirapalli, South Arcot, Chingelput;
	inland	Madravai, Coimbatore, Salem, North Arcot, Nilgiris.
Mysore	coastal	North Kanara, South Kanara, Shinoga, Chikneagalur, Coorg, Mysore, Mandya, Hasan, Dharwar, Belgaum;
	inland	Bangalore, Kolar, Tumkur, Chitaldrug, Bellary, Raichur, Bijapur, Gulbarga, Bidar.

4. The proportion of rural single females by age-group for the States of Madras, Kerala, Mysore is shown in Table (3). It may be observed that the proportion of single females in the age-group 0-14 years is 99.41 per cent in Kerala while that in Mysore is 94 per cent. The proportion of single females in the age-group 15-24 is seen to be nearly 43 per cent in Kerala as against 26 and 8 per cent in Madras and Mysore respectively. It may also be observed that very few females remain unmarried after 45 years in all the three States, the proportion of single females being very low in the age group 45 and over in all the three States. The proportion of single females in Kerala, is seen to be fairly high in the age-group 15-24. Therefore so far as the rate of participation of females in the age-group 15-24 in reproductivity is concerned, the proportion (of married females) is least in Kerala and highest in Mysore, and that for Madras lies between the same proportions in Kerala and Mysore but that in Madras much higher than the same in Kerala.

Table (3): **Percentage distribution of single females by age group from two interpenetrating samples for the States of Madras, Kerala and Mysore: First and second sub-rounds combined, NSS 14th round rural.**

Age group	*Madras*			*Kerala*			*Mysore*		
	sample 1	*sample* 2	*combined*	*sample* 1	*sample* 2	*combined*	*sample* 1	*sample* 2	*combined*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0-14	98.83	98.86	98.84	99.09	99.73	99.41	93.91	94.16	94.03
15-24	28.60	23.16	26.37	44.64	41.08	42.83	8.52	6.77	7.52
25-44	0.74	1.08	0.88	4.13	4.30	4.22	0.96	1.85	1.45
45-above	0.18	0.25	0.21	1.41	0.68	1.06	1.05	1.01	1.03

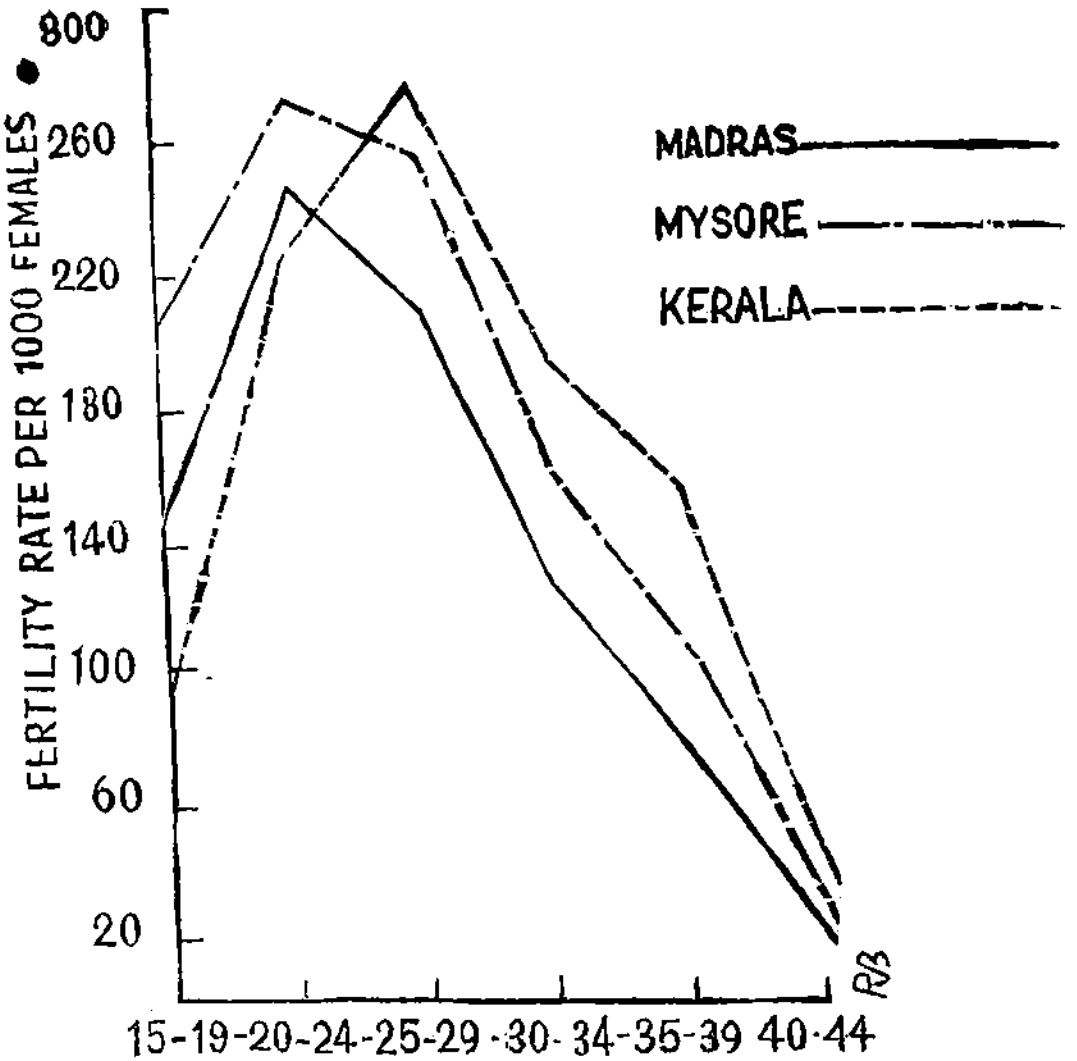
5. Table (4) gives the age-specific fertility rate, marital and nuptial fertility rates per 1000 rural females for the States of Madras, Kerala and Mysore. It may be seen that in Kerala reproductivity starts at a very high level from the age of 20-24 years and continues up to the age 35-39 years at a fairly high level and then declines to a very low level. In Madras , however, reproductivity starts at an age lower than that in Kerala and attains highest level

in the age-group 20-24 and declines thereafter progressively. In Mysore reproductivity starts at a very high level attains peak level at the age 20-24 years as in the case of States of Madras from the age of 15-19 years and declines slowly thereafter up to the age of 39 years and then declines sharply to the same level as that of Madras and Kerala. In the age-group 25-44 the proportion of widows per 100 females was nearly 14 and 15 in the States of Madras and Mysore respectively while that in Kerala was only 7. With the same proportion of widows among the females in the age-group 25-44 years the age-specific fertility rate is seen to be much higher in Mysore than that of Madras. In Madras reproductivity is limited mainly to the females in the age-group 15-34. In Kerala, on the other hand, the same is confined mainly to females in the age-group 20-39. In Mysore the same is distributed over almost the whole of the female reproductive life. The pattern of age-specific fertility rates is shown in diagram 1. The age-specific-fertility curves for Madras and Mysore are seen to be running almost parallel.

Table (4): Annual age-specific fertility rate, annual marital and nuptial fertility rates per 1000 females from two interpenetrating samples: First and second sub rounds combined NSS 14th round, rural

AGE SPECIFIC

State	*Sample*	*age group*						*marital*	*nuptial*
		15-19	20-24	25-29	30-34	35-39	40-44		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Madras	1	108	236	199	128	99	22	183	161
	2	196	260	220	121	57	19	209	182
	c	144	246	208	128	80	21	194	170
Kerala	1	88	221	276	214	169	35	237	218
	2	78	231	280	177	137	55	248	215
	c	83	227	278	195	154	45	242	216
Mysore	1	210	259	266	178	105	36	245	216
	2	201	287	248	144	114	28	223	197
	c	205	274	257	160	109	32	233	205


800
260
220
180
140
100
60
20
FERTILITY RATE PER 1000 FEMALES
MADRAS
MYSORE
KERALA
15-19-20-24-25-29-30-34-35-39 40-44
R/3

6. The proportion of married females in the age-group 15-24 in Madras is higher than that in Kerala but the same in the age-group 25-34 in Madras will not be much different from that in Kerala. The marital fertility and nuptial fertility in Madras, is seen to be much lower than the corresponding rates in Kerala. If we assume that all the widows in the age-group 25-44 became widow at the age of 35 years and the practice of family planning being almost non-existent in the country it is also observed that the fertility of the females in the age-group 35-59 in Madras is significantly lower than that of the same females in Kerala. Both the marital fertility and nuptial fertility rates in Kerala and Mysore are seen to be of the same order although the proportion of married females in the age-group 15-24 and the proportion of widows in the age-group 25-44 in Mysore is much higher than those in Kerala.

7. Increasing emphasis is being laid on the family planning to reduce the birth rate so as to check ultimately the growth of the population. The urban husbands were surveyed in the sixteenth round of National Sample Survey (NSS) to examine the extent of practice of family planning among the urban couples. The results show that a small proportion of the husbands with wife below 45 years (3.76%, 3.47% and 0.29% in Madras, Kerala and Mysore respectively) practices family planning while a large proportion of such husbands (50.66%, 45.16% and 18.04% for Madras, Kerala and Mysore respectively) possesses specific knowledge on the family planning methods. In NSS Report on 'Couple Fertility' (Report No. 7) the fertility performance of the couples by formal marriage duration was studied. But India being a country of early marriage the fertility perfromance by effective marriage duration (i.e. since starting of cohabitation) would be more meaningful. In appendix the fertility performance by effective marriage duration is given. It may be seen that on the average 3 children were born to the rural Hindu couples married 1930 and after, at the stage of 11 years of effective marriage duration. If it is assumed that the couples will be practising

family planning after they have three children, the rural wives on the average will have to practise family planning in the latter half of their reproductive life, India being a country with low age at marriage.

8. Mr. C. Tietze studied the impact of contraception on the level of birth rate in his paper on "pregnancy rate and birth rate" for stable population with life expectancy at birth 50 years. The births per woman of completed fertility, contraception being instituted after the third pregnancy and all later pregnancies being accidental and the birth rate per 1000 population given in the paper are shown in Table (5). With complete protection against unwanted pregnancy, the number of births average to 2.2 per woman, including those never married. It may be seen from Table (5) that the birth rate is increasing sharply with the increase in the number of births per woman due to the failure of contraception.

Table (5) Births per woman of completed fertility and birth rate per 1000 population: Contraception instituted after third pregnancy all later pregnancies accidental.

Birth per woman of completed fertility	2.20	2.59	2.96	3.30	3.63	4.23	4.78	5.28
Birth rate per 1000 population	14.6	18.1	21.5	24.5	27.2	32.1	36.0	39.4

9. The average exposure of reproductive life after having the desired number of children is thus seen to be an important factor to be taken into consideration for the formulation appropriate role of the family planning clinics and suggesting the specific method of contraception. In order to reduce the high fertility by motivating the couples to family planning the regional variation in the age specific fertility should also be understood fully.

REFERENCES

1. National Sample Survey (1956): "Couple Fertility", Report No. 7, Department of Economic Affairs, Ministry of Finance, Government of India.

2. National Sample Survey (1961): "Preliminary Estimates of Birth, Death rates and the rate of Growth of Population", Report No. 48, Cabinet Secretariat, Government of India.

3. National Sample Survey (1963): "Fertility and Mortality rates in India", Report No. 76, Cabinet Secretariat, Government of India.

4. National Sample Survey: Tables with notes on Family Planning Draft Report No. 116.

5. Dr. Saibal Banerji & Nitai Chandra Das (1964): "Natural Growth rate in Rural India", Seminar on Population, Institute of Economic Growth, New Delhi.

6. Mr. C. Tietze (1962): "Pregnancy rates and birth rates", Population Studies, Vol. XVI, No. 1.

APPENDIX

Procedure of estimation of the number of children born to the couples with the wife's age at marriage 0-14 years at 2, 7 and 12 years of effective marriage.

1. Table (A.1) gives the number of marriages in specified wife's at marriage groups per 100 marriages for all-India rural Hindu Couples married 1930-after.

Table (A.1): Number of marriages in specified wife's ages at marriage groups per 100 marriages : All—India rural Hindu Couples married 1930—after NSS 2nd round.

wife's age at marriage						*all ages*
0-5	6-11	12-14	15-16	17-27	22-above	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
4.50	24.70	28.70	19.90	16.50	5.70	100

Source: National Sample Survey, Number 7, Couple fertility (1956), Government of India, Ministry of Finance, Department of Economic Affairs, P. 23.

2. Table (A.2) gives the average number of children born to the rural Hindu Couples married 1930—after 2, 7, 12 year's stages after formal marriage.

Table (A.2): Number of children born per couple at years after formal marriage stage, 2, 7 and 12 by marriage duration and wife's age at (formal) marriage: all India rural Hindu Couples married 1930—after NSS 2nd round.

wife's age at marriage	*2 years after marriage*			*7 years after marriage*		*12 years after marriage*
	marriage duration (years)			*marriage duration (years)*		
	2-6	7-11	12-21	7-11	12-21	12-21 *years marriage duration*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
below 15	0.16	0.07	0.06	1.17	0.90	2.22
15-above	0.39	0.23	0.21	1.83	1.66	3.12
all ages	0.31	0.15	0.12	1.50	1.22	2.61
(no. of couples)	(1306)	(1834)	(3102)	(1884)	(3102)	(3102)

Source: op. cit. p. 123.

3. The following assumptions have been made:

(i) The female partners with age at marriage below 14 years started, cohbitation when 14 years old because the girls when married at tender ages are not sent to their husband's house unless they become fit for child bearing.

(ii) The lowest age at marriage of the female partners was 3 years.

(ii) The number of couples with the wife's age at marriage 3-9 years and 10-14 years are equally distributed over the age-groups.

(iv) The number of children born to the couples with wife's age at marriage 3-13 years at 2, 7 and 12 years at effective marriage is same as the number of children born to the couples with wife's age at marriage 14 years at 2, 7, 12 years of marriage respectively.

4. Let c_j^k = number of couples with the wife's age at marriage k years marriage duration j (= 7, 12) years and this was determined by applying the proportion given in Table (A.1) to the number of couples given in Table (A.2).

Let r_{ij}^k = fertility rate for the couples c^k at i (= 2, 7, 12) years of marriage stage.

Let n_{ij}^k — number of children born to couples c_j^k at i years of effective marriage stage.

$$n_{2j}^{0-14} \times C_j^{0-14} = n_{0j}^{12} + n_{1j}^{13} + n_{2j}^{14} \qquad (j = 7, 12) \qquad (1)$$

$$n_{7j}^{0-14} \times C_j^{0-14} = n_{0j}^{7} + n_{1j}^{8} + n_{2j}^{9} + \qquad n_{7j}^{14} \quad (j = 7, 12) \qquad (2)$$

$$n_{12,12}^{0-14} \times C_{12}^{0-14} = n_{1,12}^{3} + n_{2,12}^{4} + \qquad n_{12,12}^{4} \qquad (3)$$

Owing to the assumptions (iii) and (iv) the expressions (1), (2) and (3) can be written respectively as :

$$\sum_{i=0}^{2} n_{ij}^{14} = n_{2j}^{0-14} \times C_j^{0-14} \qquad (j = 7, 12)$$

$$\sum_{i=3}^{7} n_{ij}^{14} = n_{7j}^{0-14} \times C_j^{0-14} - \sum_{i=0}^{2} n_{ij}^{9}$$

$$= n_{7j}^{0-14} \times C_j^{0-14} - \left(\sum_{i=0}^{2} n_{ij}^{14}\right) \frac{C_j^9}{C_j^{14}} \qquad (j = 7, 12)$$

$$\sum_{i=8}^{12} n_{i,12}^{14} = n_{12,12}^{0-14} \times C_{12}^{0-14} - \sum_{i=1}^{7} n_{i,12}$$

$$= n_{12,12}^{0-14} \times C_{12}^{0-14} - \left(\sum_{i=0}^{7} n_{i,12}^{14} \right) \frac{C_{12}^{9}}{C_{12}^{14}}$$

Let $\omega_{xj} = \sum_{i=0}^{x-1} n_{ij}^{14}$, $(j = 7, 12 , \omega_{0j} = 0)$

$$n_{2j}^{14} = \sum_{i=0}^{2} n_{ij}^{14} - \sum_{i=0}^{1} n_{ij}^{14} = \omega_{3j} - \omega_{2j} \quad (j = 7, 12)$$

$$n_{7j}^{14} = \sum_{i=0}^{7} n_{ij}^{14} - \sum_{i=0}^{6} n_{ij}^{14} = \omega_{8j} - \omega_{7j} , \quad (j = 7, 12)$$

$$n_{12,12}^{14} = \sum_{i=0}^{12} n_{i,12}^{14} - \sum_{i=0}^{11} n_{i,12}^{14}$$

$$= \omega_{13,12} - \omega_{12,12}$$

$w_{2,12}$, $w_{7,12}$ and $w_{12,12}$, are obtained by interpolation from $w_{0,12}$, $w_{3,12}$, $w_{8,12}$ and $w_{13,12}$. $w_{2,7}$ and $w_{7,7}$, are obtained by interpolation from $w_{0,7}$, $w_{3,7}$, and $w_{8,7}$. From n_{2j}^{14} and n_{7j} (for $j = 7, 12$) and $n_{12,2}$ the number of children born to the couples with wife's age at marriage below 15 at 2, 7, 12 years of effective marriage stage are estimated.

5. Table (A.3) gives the average number of children born to the rural Hindu Couples married 1930—after at 2, 7 and 12 years stages after effective marriage (i.e. since the couples started cohobitation)

Table (A.3): Number of children born per couple at years after effective marriage stage 2, 7 and 12 by formal marriage duration: all India rural Hindu Couples married 1930—after, NSS 2nd round

years after effective marriage stage	*formal marriage duration (years)*		
	2-6	7-11	12-21
(1)	(2)	(3)	(4)
2	0.39	0.37	0.28
7	..	2.01	1.63
12	..	..	3.14

3. SOME ASPECTS OF FERTILITY IN KERALA

By

M. V. Raman

Demography Unit

Indian Statistical Institute, Calcutta-35

INTRODUCTION

The demographic situation in Kerala presents certain sharp features. Some of them are relevant to a study of fertility and its trends. It is the smallest of the States, covering only 1.27 per cent of the total area of India with 3.85 per cent of the Indian population in 1961. Campared to the other States it has the highest density of population, 1127 persons per square mile (India: 370). The sex ratio is the highest, 1022 females per 1000 males (India: 941), which had, if at all, shown a slight increase since 1901. The overall literacy level is also about the highest, about 47 per cent, the figures for males and females being 55 and 39 respectively (India: 24, 34, and 13). The average age at marriage is also the highest, and consequently the proportion married is lowest in early age-groups.

The villages in which the majority of the population live are much larger than a typical Indian village. A number of these villages have a population of 5,000 or over, some of them even exceeding 10,000. One might, therefore, expect certain marginal features of urbanism in these villages. The industrial category-wise distribution of workers of the State generally lends support to this view. About 47 per cent were employed in agriculture and allied activities (I, II & III), about 19 per cent were employed in industries including commerce (V, VI, VII & VIII) and about 34 per cent either worked in household industries (IV) or were classified as belonging to "other services" category (IX), the latter group predominating (India: 72,11 and 17 per cent)[3]. The large proportion of workers in non-agricultural operations might give the impression that there is intensive industrial development in the State On the other hand, this might be due mainly to the development of small industries with low capital investment[8].

Growth of population.

The steady growth of population of Kerala is primarily due to natural increase. The growth pattern conforms to the second stage of demographic transition, a rapid growth brought about by a high birth rate and a declining death rate.

The following table gives the rate of growth of population in Kerala and India Since 1900[3].

Table 1: Decennial growth rate.

	1901-10	1911-20	1921-30	1931-40	1941-50	1951-60
Kerala	+11.8	+9.2	+21.9	+16.0	+22.8	+24.8
India	+5.7	—0.3	+11.0	+13.5*	+14.0*	+21.5

* corrected for estimated inflamation in Punjab and West Bengal in 1941 Census

The birth rate during 1941-50 and 1951-60 for India has registered a slight increase from 39.9 to 41.7. Similarly, the birth rate for Kerala has also shown an increase from 37.4 (Travancore-Cochin) to 38.9 (Kerala)[7]. Most of the other States had also recorded a similar trend. The observed increase

might be due to an increase in the marital fertility rate or due to changes in other demographic variables. It is significant to note that while the birth rate [7] in Kerala is seen to be lower, marital fertility rate[9] is generally higher than among the rest of the States. The following table gives the annual general fertility rate (per 1000 females aged 15-44), nuptial fertility rate (per 1000 ever-married females aged 15-44) and marital fertility rate (per 1000 married females aged 15-44) for Kerala and the contiguous States of Madras and Mysore according to the NSS fourteenth round, 1958-59, (rural)[9].

Table 2: Annual general, nuptial and marital fertility rates for Kerala Madras and Mysore (rural).

	General fertility rate	*Nuptial fertility rate*	*Marital fertility rate*
Kerala	171.90	216.36	242.38
Madras	152.17	169.54	194.35
Mysore	190.29	204.99	232.52
All India (rural)	177.87	192.26	211.36

The first index represents the net result of the existing conditions relating to marriage, widowhood and marital fertility, the second one is a measure of the fertility of all those women who had been exposed to the risk of child birth and the third one measures the level of marital fertility. The chief explantion for the lower birth rate in Kerala perhaps may be attributed to the high proportion of single women in the fertile ages.

Factors affecting fertility.

The factors that affect human fertility are numerous and complex in their inter-relation and their influence on fertility may be positive or negative on the balance. The relevance of some of the social practices has been considered in an earlier communication[10]. In the following paragraphs these and some other factors have been examined with a view to indicating the direction in which they tend to influence fertility in Kerala without going into the question of the possible extent of change in fertility. One of the major forces regulating fertility in the Western countries is the practice of contraception

which has yet to make its impact on the fertility behaviour of the people of this State. Consequently, this aspect has not been discussed here.

Marriage rate.

The effect of changes in the proportion married in a population on the birth rate is obvious, other factors remaining the same. In the following table the percentage distribution of females by age and marital status are presented for Kerala, Madras and Mysore based on the NSS fourteenth round data (rural)°. The proportion married among the Kerala female population is only 39 per cent compared to the all-India level of 48 per cent. In the more fertile age-group, 15-24, the proportion classified as married at the time of investigation is considerably less than that observed in the contiguous States of Madras and Mysore (as well as in the other States).

Table 3: Percentage distribution of females by age and marital status for Kerala, Madras and Mysore (rural)

Age group	*Marital status*	*Kerala*	*Madras*	*Mysore*	*India*
0-14	Single	99.41	98.84	94.03	91.56
	Married	0.56	1.15	5.88	8.37
	Widowed	0.01	0.01	0.09	0.56
	All marital status	100.00	q00.00	100.00	100.00
15-24	Single	42.83	26.37	7.52	10.30
	Married	53.77	71.09	88.29	86.94
	Widowed	0.22	1.01	1.93	1.39
	All marital status	100.00	100.00	100.00	100.00
25-44	Single	4.22	0.88	1.45	0.45
	Married	83.41	82.22	81.91	87.09
	Widowed	6.96	13.62	14.72	11.18
	All marital status	100.00	100.00	100.00	100.00
45-	Single	1.06	0.21	1.03	0.40
	Married	57.93	36.89	34.40	43.01
	Widowed	37.55	61.84	64.01	56.03
	All marital status	100.00	100.00	100.00	100.00
All	Single	50.42	40.09	41.37	38.80
	Married	39.31	42.83	53.38	48.06
	Widowed	7.83	15.70	14.30	12.48
	All marital status	100.00	100.00	100.00	100.00

However, in the age group, 25-44, the married proportion is at par with similar proportions elsewhere because of the cumulative effect of a larger number of spinsters marrying and slightly lower incidence of

widowhood. It was also observed that wide disparity exists between the male and female married proportions in the age group 45 and over indicating increased incidence of widowhood and lesser remarriages among females (the percentage married among males and females being 89.67 and 57.93 for Kerala). The variations in the proportions of single women in the age group 15-24 years also reflects the differences in the age at marriage. Nevertheless, the effect on the birth rate of a high proportion of spinsters at earlier and more fertile ages is to some extent neutralized by the low proportion of widows.

Though practically all women marry before long, the effective exposure per woman to the risk of pregnancy during the early reproductive period is less in Kerala on account of a lower marriage rate. The consequent reduction in the births will tend to depress the birth rate. But this may be a partial assessment since it is suspected that in such a situation other counter-acting forces might intervene. For instance, it is some times advanced that very early pregnancies may lead to fecundity impairments or even sterility[2], [4]. The existing pattern of marriage in the State necessarily cuts off to some extent exposure to pregnancy at early ages. If the above theory has any validity, it follows that the increase in the marital fertility thus caused will tend to swell the birth rate.

Age at marriage.

The age at marriage is an important consideration in fertility determination. A comparison of the proportion of spinsters in the age group 15-24 and 25-44 shown in Table 3 (and extended to cover all the States) is suggestive of a higher average age at marriage in Kerala than in any other State. The impact of this factor on fertility is, therefore, presumed to be more intense in this State. According to a recent calculation the mean age at marriage was 20.7 years and 19.9 years for urban and rural females respectively on the basis of 1961 census. The corresponding figures for India were 17.8 and 15.4. As most women marry before reaching the age of 44, the

higher age at marriage only signifies that the proportion of women contributing to births during the early periods of reproduction is relatively smaller in Kerala than in the other States. This would tend to depreciate the birth rate. But as stated earlier the late start of reproduction thus avoiding very early pregnancies might lead to a higher fertility of married women in subsequent years which may tend to raise the birth rate.

In some of the recent demographic studies the influence of the age at marriage has been examined at length. The conclusions are by no means unanimous. In the Mysore Population Study[14] the higher age at marriage was found to be associated with lower fertility. For instance, the number of children born to women aged 45-54 years with unbroken marriages in Bangalore City was estimated as 6.7, 6.0, 5.7, and 4.6 for those married below 14, 14-17, 18-21 and 22 and over respectively. In a study[11] conducted in some rural parts near Benares, it was observed that the total number of children born to women who consummated the marriage at 14 or less, 15-16 and 17-19 years were 7.3, 7.05 and 6.8 respectively. However, a comparison of the fertility performance of these women after age 20 revealed an interesting phenomenon. The number of children born for the above three categories of women were estimated as 6.2,. 6.35, and 6.6, indicating that postponement of marriage was associated with increased fertility at higher ages. On the other hand, a study[12] carried out in Lucknow and Kanpur showed that women who were married between 16 and 18 years of age had a somewhat larger number of children than those who were married either before or after this age. The results of yet another study[2] support the view that increasing the minimum age at marriage from 15 to 16, 18 or 19 would lead to higher rather than lower fertility on account of the expected improvement in health. This is generally endorsed by other writers also.[13]

It was stated earlier that the birth rate of the State has recorded an increase over the last two decades. A plausible explanation for this might be

the increase in the marital fertility rate as a result of somewhat late marriages and improved public health situation. In some of the other States also where the average age at marriage is still low, the birth rate is high. One of the reasons may be the larger proportions of births in the initial reproductive ages as a consequence of earlier marriages.

It is often advanced that raising the minimum age of marriage to 20 years will prove effective in curtailing fertility. The effect of such a social legislation obviously will be that women will cease to marry and reproduce during 15-19 age period. However, marriages which normally take place after age 20 are not likely to be substantially affected by this minimum age stipulation and larger numbers of women will still be marrying at the most fertile period of their life, namely 20-24 years. While such a legislation will necessarily enhance maternal health, a desirable consequence, for this and other reasons stated earlier, it is not expected to bring down a reduction in marital fertility (rather it might even increase it) unless of course the practice of contraception makes substantial in roads into the sex behaviour of the people, particularly of rural areas. And such a transformation seems impracticable in the near future. If, on the other hand, the age group 20-24 is also made ineffective, that is by fixing the minimum age for marriage at 25, some substantial reduction in fertility rate and therefore on the birth rate could be anticipated. But social legislation cannot be so stringent as to militate against the sentiments, traditions and established attitudes of the people.

Other social and cultural factors. Restrictions on widow-remarriage and sex relations.

Besides the factors already enumerated, there are other social practices and injunctions which though not prescribed for their effect on fertility tend to influence fertility performance one way or the other. Important among them are restrictions on widow-remarriage and taboos on sex relations. All these factors are subject to modification under the impact of social and economic changes.

The effect of widowhood on completed family size has been examined in the Mysore Population Study[14]. It was estimated that the death of some of the husbands before the end of the wife's reproductive lifetime reduced the average size of families by approximately 1.0 children for the rural areas. A comparison of the distribution of women by marital status clearly shows that the proportion of widows in Kerala in any age group is less than that of any other State. With further imporvement in the social climate widowhood might further decline (either by improved survival of the male or higher remarriage rate or both) causing some gains in future fertility but such gains, in view of the already low level of widowhood, might be of a lower order in this State than what others might experience under similar conditions.

The existing taboos on sex relations probably have a dampening effect on fertility. The extent of operation of such taboos in the State is not precisely known. The expected improvement in the social situation of the population will tend to take the taboos less rigid which in effect might give a little boost to fertility.

Literacy.

The literacy level of the State with further anticipated improvements in it can be moulded into an effective force to counter-balance to a reasonable degree the influence of the fertility inducing factors already mentioned. For, the real significance of a small family ideal can then be driven home more effectively contributing to the emergence of the required motivation for the practice of family planning. Nevertheless, the situation requires diligent handling and cautious consideration. The mere pumping of contraceptive supplies into a community is a futile effort.

Economic factors.

The relationship between economic status and fertility has received some attention in recent years. A study[6] based on the National Sample Survey data

(seventh round-rural) had revealed that marital fertility is low at a low level of living, but with a gradual rise in the level of living it reaches a peak value at a critical level of living and then falls with further improvement in it. It was also presumed that with still further rise in the level of living the diminishing trend of fertility may be reversed which hypothesis, however, could not be tested on account of inadequate data at the higher levels of living. In another study[5] it was reported that the fall in marital fertility had already set in as a result of economic growth at the all India level which may even be accelerated if the family planning movement proves effective.

If economic progress can lead to a reduction in fertility, then in Kerala the expected improvement in the level of living consequent upon economic growth may be the precursor of lower levels of fertility in the future. But the matter is not so straight as it appears to be, particularly in the absence of effective birth control practice. In such a situation, therefore, the future trend (especially when it is to establish a downward one) cannot be precisely assessed on the basis of a single criterion like the level of living. Development in any sector, whether economic, social or cultural tends to affect in different directions and degrees the complex set of forces influencing fertility. While it might be possible to indicate the directions in which fertility might be affected by the expected changes in the individual factors, the future trend in fertility will be determined by the composite effect of changes in the whole gamut of factors affecting fertility. In this discussion only a few important factors in the fertility process have been examined. The general picture that emerges from this study does not support a declining trend in the fertility or the birth rate of the State for a few years to come.

Conclusion.

In the foregoing paragraphs a number of determinants of fertility have been broadly examined. Some of them are in the nature of encouraging fertility while others tend to inhibit it. These factors may be modified in the course of time. In the absence

of extensive birth control practice, therefore, it is rather difficult to precisely chalk out the future course of fertility which result from the action and inter-action of several competing forces. In the case of Kerala, in view of the seemingly counter-balancing nature of these forces, one might expect a sort of a 'sticky' birth rate for some years to come.

REFERENCES

1. Agarwala, S. N. (1964) — Importance of age at marriage, Yojana, April 12, 1964
2. Ali, S. A. (1961) — Fertility, AICC Economic Review, Vol. XIII, No. 12
3. Census of India, 9161 — Final Population Totals, Paper No. 1, 1962
4. ECAFE (1958) — Population trends and related problems of economic development in the ECAFE region
5. Gupta, P. B. — Fertility and economic growth, Asian Population Conference, New Delhi, 1963
6. Gupta, P. B. and Malaker, C. R. (1963) — Fertility differential with level of living and adjustment of fertility, birth and death rates, Sankya, Series B, Vol. 25, Parts 1 & 2.
7. Jain, S. P. — State growth rates and their components, All India seminar on Population, Delhi, 1964.
8. Kurup, R. S. and Nair, K. N. — Population as a limiting factor in economic development, All India Seminar on Population, Delhi, 1964
9. National Sample Survey (1963) — Fertility and mortality rates in India (fourteenth round), Number 76, The Cabinet Secretariat, Government of India
10. Raman, M. V. — Some social practices and attitudes and their effect on fertility, Fifth All India Conference on Family Planning, Patna. 1964
11. Rele, J. R. (1962) — Some aspects of family and fertility in India, Population Studies, Vol. XV, No. 3.
12. Sinha, J. N. (1951) — Fertility and age at marriage, Bulletin of the International Statistical Institute, Vol. XXXIII, Part IV.
13. Thompson, W. S. (1952) — Type of knowledge needed for an adequate approach to problems of (high fertility in agrarian societies in Approaches to Problems of High Fertility in Agrarian Societies, Milbank Memorial Fund, New York.
14. United Nations (1961) — The Mysore Population Study: A co-operative project of the United Nations and the Government of India Population Studies, No. 34, ST/SOA/Series A/34.

4. RECENT TRENDS IN MORTALITY IN KERALA

By

R. RAMALINGOM,
Research Officer,
Bureau of Economics and Statistics

I. Introduction.

A rapid reduction in mortality rates coupled with a constant high level of fertility has been found to be the basic factor contributing to the high rate of growth of population experienced in most of the developing countries during recent periods. India is no exception to this. The Registrar General has estimated the crude birth rate of India as 40 and crude death rate as 18[1] during the decade 1951-60. Among Indians, the Keralites are well known for their better civic sense and clean habits even from olden days and therefore it is natural that they enjoyed a longer life as compared to others[2]. The expectation of life at birth in Kerala as estimated by the Registrar General for the decade 1951-60, is 48 years and for India as a whole, only 41 years[1]. In this context it will be interesting to study the extent to which the mortality conditions of the people of Kerala have undergone changes during this century. This paper aims to trace the changes in the mortality conditions in Kerala during the past few decades.

2. Measurement of Mortality.

The simplest index of mortality is crude death-rate, defined as the ratio of the number of deaths occurring to a population during one year to the mid year population. As is well known this index is very much affected by the age-sex distribution and therefore this index may not always reveal the true picture. Next, there are age-specific mortality rates which also do not provide a single index. But the expectation of life at birth is perhaps the only known single index

(1) S. P. Jain, 'State Growth' Rate & their components' All India Seminar on Population, Institute of Economic Growth, Delhi 1964.

(2) T. K. Velu Pillai, The Travancore State Manual Vol. I-I, Trivandrum 1940.

which can be used to measure the mortality conditions of a community during a period of time. This paper therefore intends to study the changes in mortality based on the values of expectation of life obtained from the life tables of Kerala.

3. Data Used.

The Demographic Research Centre, Trivandrum has already constructed two life tables for Kerala one for the decade 1931-40 and the other for 1941-50[3]. For the present study, life tables have been constructed for the earlier decades 1911-20 and 1921-30 as well as for the decade 1951-60. Life tables can be prepared starting from the age-specific mortality rates of the population. The source of mortality statistics is generally vital statistics registration records. Though the practice of registering births and deaths is in vogue in this State for the last several decades the accuracy of the vital rates compiled from them is questionable. This is clear from the fact that the registered death rate in 1961 is found to be 9 which is less than the death rates in the advanced countries of the world[4]. Hence the registration data available will not be of any help for framing mortality rates. The next alternative is to utilise the data collected through the decennial censuses to calculate the mortality rates. In this paper the census data are used to derive the survival ratios by tracing cohorts living at one point of time to their survivors at another point of time. Details of the method are given as appendix.

4. Limitations.

(i) The effects of migration have not been taken into consideration.

(ii) As no reliable data are available for estimating the infant mortality rates of the various decades the trend noted in the infant mortality rates of Madras State during the past 50 years has been

(3) Demographic Research Centre, Trivandrum 'Life Tables for Kerala, 1931-40 and 1941-50, Trivandrum, 1963.

(4) U. N. Demographic Year Book, New York, 1963.

adopted for estimating the corresponding rates for Kerala starting from 1941-50 rates. It is quite possible that the rate of reduction in infant mortality rates of Kerala might be higher than that of Madras.

(iii) The errors in the census data due to under-enumeration and omissions have not been adjusted. If the incidence of errors is assumed to be same in the two censuses, the survival ratios will not be affected much.

5. Results.

The expectation of life at the selected ages is presented below for males and females for the different decades for Kerala.

Table—I

Expectation of Life at selected ages for Kerala

Age	1911-20		1921-30		1931-40*		1941-50%		1951-60	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
0	25.49	27.41	29.54	32.70	33.19	35.00	39.89	42.34	46.17	50.00
1	32.63	34.98	38.40	39.82	39.62	40.72	46.44	48.49	51.43	55.78
5	33.94	35.20	38.58	40.76	40.76	41.43	47.51	49.98	50.80	55.33
15	29.64	28.87	33.83	33.74	35.84	35.50	40.47	42.71	43.01	47.11
20	26.66	25.68	30.21	29.71	32.14	32.15	36.31	38.29	36.85	42.41
25	23.21	22.97	26.21	26.10	28.43	29.13	32.32	33.99	23.28	38.11
35	17.28	18.79	19.67	20.49	22.03	23.48	25.05	26.33	26.22	30.03
45	12.56	14.20	14.53	15.16	15.82	17.39	18.58	19.53	19.08	22.94
55	8.51	10.05	10.32	10.82	10.49	11.69	13.15	13.55	13.26	16.97
60	6.91	8.42	8.59	9.03	8.78	9.47	10.87	11.12	10.95	14.34

Source: * Life tables of Kerala 1931-40 published by the Demographic Research Centre, Trivandrum.

% Life tables of Kerala 1941-50 do.

The expectation of life at birth which was 25 for males and 27 for females during 1911-20 has increased to 46 for males and 50 for females by the decade 1951-60. In 40 years the expectation of life at birth has increased by 21 years in the case of males

and 23 years in the case of females. In this connection, it may be pointed out that various studies conducted by the U.N. in about 143 countries have revealed that an annual gain of half an year in the expectation of life at birth is normal for expectation of life ranging from 30 to 55 years[5]. For the first 20 years the gain in expectation of life at birth is only 7.7 years for males and 7.6 years for females. After the decade 1931-40 there is rapid gain in the expectation of life at birth both for males and for females. During the last decade expectation of life at birth has gone up by 6.3 years for males and 7.7 years for females. When the last two decades are compared the absolute increase in expectation of life at birth is more or less the same during each decade. This achievement can be attributed to the fact that since 1947 a sizable amount has been spent by the Government on medical, public health and housing activities.

5.2. Another feature noted is that in all the 5 life tables the expectation of life at birth is greater for females than for males.

5.3. Since rates of mortality at very young ages are not entirely dependable it is desirable to compare expectations of life at age 5. The gain in expectation of life at age 5 in 40 years is 27 years for males and 20 years for females. At age 20 the increase in the expectation of life in 40 years is 10 years for males and 17 years for females. During the decades 1911-20 and 1921-30 the value of expectation of life of males is higher than that of females for the age groups 15-19 years and 20-24 years. In the decade 1931-40 this characteristics is seen only for the age group 15-19 years. After 1931-40 the value of expectation of life of females is higher than that of males. The reason for this is that maternal mortality was rampant in the earlier decades and after 1931-40 there was much reduction in material deaths. The greater gains in

(5) United Nations, The Future Growth of World Population, ST/50A/Series A/28, New York.

the values of expectation of life for females than that of males noticed in the higher age groups during the later decades can be attributed to the fact that in general mortality is lower for females than for males. The existence of higher maternal mortality in the earlier decades also explains the difference.

5.4. The expectation of life at age 15 is seen to be much higher than at age 0 both for males and females till 1941-50. This feature reflects the very high infant mortality prevalent in the earlier decades. But during 1951-60 the expectation of life at age 10 is only slightly higher than that at age 0. In countries like U.K. with low infant mortality, expectation of life at birth decreases from its value at birth as age increases.

5.5. A comparison of the values of the expectation of life at birth in Kerala and India as a whole reveals that in all the decades the values of expectation of life at birth in Kerala are much higher than that for India as a whole both for males and females. The relevant figures are given in the table below:—

Table—2

Values for Kerala and India

Period	*Kerala*		*India*		
	Males	*Females*	*Males*	*Females*	
1911-20	25.49	27.41	19.42	20.91	(6)
1921-30	29.54	32.70	26.91	26.56	(6)
1931-40	33.19	35.00	32.09	31.37	(7)
1941-50	38.89	42.34	32.45	31.66	(8)
1951-60	46.17	50.00	41.2		(9)

(6) Life tables of India 1881 to 1961 published by the Registrar General of India

(7) Population of India and Pakistan by Kingsley Davis

(8) Life Tables—Census of India Paper No. 3 of 1963.

(9) Ibid

5.6. As in the case of Kerala the gain in the expectation of life at birth both for males and females of India is nearly 20 years in a period of 40 years. Expectation of life at birth of females during the decade 1941-50 is only 32 years in India as a whole while the expectation of life at birth for females of Kerala even for the decade 1921-30 is 32 years. In the case of males such a wide gap is not noticed between the Kerala and all India figures. For the decade 1951-60 the expectation of life at birth for males and females together is given as 41.2 years for India by the Registrar General. Thus for India as a whole the last decade can be considered as a 'great leap forward' as far as the gain in the expectation of life at birth is concerned. As for Kerala, it is not as pronounced as in the case of all India. The reason is as pointed out earlier that Kerala people have all along been enjoying a better and healthy life than the people of other parts of India during the last fifty years.

5.7. In Kerala female life expectancy at birth is higher than that of males in all the decades. But, for all-India the expectation of life at birth of females, is lower than that of males from 1921-30 to 1941-50. It may be pointed out that in the life tables of advanced countries the higher expectancy at birth of females is seen to be a normal characteristic. In this respect Kerala's position is unique among the States in the Indian Union.

6. The Future vital rates and the future population:

In this Section, the trends observed in the values of e: will be projected to the future and an estimate of population will be arrived at.

6.1. The average values of expectation of life at birth calculated for the five decades are used to fit the exponential curve $y=ae^{bx}$ where y denotes the expetation of life at birth and x stands for the decade. The equation of the curve obtained is $y=26.35e^{0.0640x}$ where the decades 1911-20, 1921-30 etc. are represesnted by x—0, 1 etc. The estimated

values of the expectation of life at birth are given below for the decades 1961-70 and 1971-80.

Table—3

Estimated values of future e:

Period	*Expectation of life at birth (years)*
1961-70	55.1
1971-80	63.8

6.2. Kerala population during the last five decades shows the characteristics of a population with more or less constant fertility and declining mortality. In the quasi-table population model presented by the U.N.(10) the assumptions are that the mortality rates decline in such a way that the expectation of life at birth rises at pre-determined rates from 30 to 68 years during a period of 75 years and the fertility remains constant. The gross reproduction rate for Kerala during 1951-60 is 2.5. U.N. Publication shows that the gross reproduction rate for Kerala will be near about 2.5. From the quasi-stable population model, the birth and death rates corresponding to the values of expectation of life at birth already calculated can be obtained. The values are given below:—

Table—4

Estimated annual birth and death rates
(per 1000 population)

	1941.50	1951-60	1961-70	1971-80
Birth Rate	39.0	38.1	37.5	36.9
Death Rate	21.7	16.8	12.6	8.0

The above figures show that during the decades 1961-70 and 1971-80 the growth rates will be 2.5% and 2.9% per annum. In other words by 1980 the population of Kerala will be nearly 273 lakhs if the present fertility continues.

If immediate steps are not taken now to relieve this State of population pressure by bringing down the birth rate and by migrating a sizable population

(10) Ibid

outside this State the task of economic development of Kerala during the coming years will be made most difficult by the rapid increase in the population. The family planning machinery in the State has to be geared up so that birth control measures are popularised among the people and they are motivated to adopt some measures of birth control.

7. Summary and Conclusions.

In the above paragraphs the recent trends in mortality in Kerala have been analysed by using the values of expectation of life at birth as an index of mortality. Abridged life tables have been prepared for the decades 1911-20, 1921-30 and 1951-60. The method of construction of life tables is explained in the Appendix. The values of expectation of life at birth of Kerala for the different decades and the corresponding values of India are compared. In all the decades it is seen that the expectations of life at birth of Kerala are very much higher than that of India. The gain in the expectation of life at birth during the last 40 years is found to be nearly 20 years both for India as a whole and for Kerala. But during the last decade the gain in expectation of life at birth is very high in India than in the State of Kerala. Using the values of expectation of life at birth of the past 5 decades an exponential curve has been fitted and values of expectation of life at birth estimated for 1961-70 and 1971-80. From the quasi-stable population model presented in the U. N. publication the values of birth rates and death rates for the past decades have been found out. If there is no change in the birth rate in the coming years and decline in the death rate continues as in the past then the growth rate for the decade 1961-70 is estimated as 2.5% and that for 1971-80 as 2.9% per annum. As a result the population of Kerala will become as high as 273 lakhs by 1980. For proper economic development Kerala cannot afford to have such a high growth rate. Steps have to be taken immediately to bring down the birth rate by gearing up the family Planning machinery in the State.

APPENDIX

THE METHOD ADOPTED FOR THE CONSTRUCTION OF LIFE TABLES

1. Introduction:

The residuary Travancore State, old Cochin State and the Malabar District of former Madras State combined to form the present State of Kerala. The age distribution of Kerala is therefore derived from the census reports of Travancore, Cochin and Madras for the years 1911, 1921 and 1931. The 1961 census of Kerala State throws out the distribution for 1961. While the Travancore census reports contained single year age-data, for Cochin and Malabar population in quinquennial age-groups alone are available. The census age returns cannot be used, as they are, for mortality analysis as there will be some bias in the census age returns which are common even in statistically advanced countries. Errors in the age returns arise due to (1) ignorance of age, (2) deliberate misstatement of age, (3) digital preferences shown by certain individuals, etc. In a normal population which is not affected by migration, the population by single year of age should be fairly smooth i.e., at any given single year of age there should be slightly fewer persons than in the preceding year of age but a few more persons than in the following year of age(11). In the age distributions derived from the census reports of the above regions, there are pronounced heapings at preferred ages such as 0, 5, 10, etc. Such distortions in the age distribution are removed by adopting the methods used by the Registrar General of India(12). The method is briefly explained below:—

2. Smoothing of Age-data:

Single year age distribution of Travancore State is first smoothed by taking a 11 year moving average. The adjusted individual age distribution is grouped

(11) Ibid.

(12) Registrar General, Agetables Census of India, 1961, paper No. 2.

in the quinquennial age groups starting with 3-7 years. For Cochin and Malabar, the quinquennial age distributions beginning from 0-4 years, 5-9 years etc., taken from the census reports have been converted into population groups from 3-7 years, 8-12 years etc. With the help of the osculatory interpolation formula. The distortions in the group totals of Malabar and Cochin are removed and the distributions are made even by applying the methods devised by the 1951 census actualy for smoothing the age tables of 1951 census(13). Adding the corresponding group totals of the three regions the population of Kerala in quinary age groups 3-7 years, 8-12 years etc., are obtained. The group populations are smoothed by the method of moving averages, the weights being 1:2:1. In the above calculations care has been taken to retain the total population as reported at the census at each stage of adjustment. No correction has been made in the group populations for removing the effect of migration. By this procedure the age distributions of Kerala for 1911, 1921 and 1931 have been prepared separately for males and females.

3. Symbols used in this Paper.

The following symbols are used in this paper.

X denotes the completed age

Px Number of Persons living at age X.

${}_{n}P_{x}$ denotes the probability that an individual exactly aged x will survive to age x + n.

lx number of persons living at age x.

dx number of persons dying between ages x and x +1.

qx represents the probability of an individual who has attained age x dying within 1 year.

px denotes the probability that an individual who has attained age x will survive to age x + 1.

${}_{n}l_{x}$ denotes the number of persons living between ages x and x+n

Tx denotes the number of years lived by all the lx individuals together, before all of them die out.

e^{o}_{x} denotes the average number of years of life remaining to persons aged x or expectation of life at age x.

(13) Census of India, Paper No. 3, 1954.

4. The Life Table.

The following paragraphs give the steps in the construction of life table.

4.1. If Px is the population aged x in 1911 and Px+10 the population aged x+10 in 1921 then the ratio $\frac{Px+10}{Px}$ gives the probability of survival 10 Px+1/2 for 10 years for the population at age x in 1911. 10Px+1/2 is the probability that a person exactly aged x+½ (x=4, 9, 14 etc.) is calculated with the help of Dr. Kozakje-wicz's Osculatory interpolation formula. Taking corresponding ratios, the values of 10Px for x=5, 10, 15 etc. have been found out. The ten year survival ratios have been split up into five year probabilities by using the relationship.

1/4 (log 10 Px+log 10 Px+5)=log 5Px(14)

Taking the anti log of log 5Px yields values of 5Px for x=5, 10, 15 upto 55.

4.2. To derive values of 5Px for ages beyond 55 a Gompertz curve has been fitted at ages 40, 45, 50 and 55 by the method of moments using the relationship.

Co-loge $5Px=Bc^x$

From the equation of the curve obtained the values of 5Px for ages beyond 55 have been estimated.

4.3 Values of Px for ages below 5 are derived by the following method. First it is necessary to estimate the infant mortality rates for each decade. As stated earlier the available statistics are of no use to compute death rates, infant mortality rates etc. Another source of obtaining the same is by conducting sample surveys. But the results obtained from sample surveys conducted are also not encouraging. After a detailed study of the registered rates and the rates computed from other sources the Demographic Research Centre, Trivandrum has estimated the infant mortality rates of Kerala for the decade 1941-50 and the same figures have been used for the construction of life tables of 1941-50. Figures of infant mortality rates are available for Madras State for the decades 1911-20, 1921-30, 1931-40 and 1941-50 in the respective life tables of Madras. Assuming that the reduction in the infant mortality rates of Kerala during the past decades follow the same trend as revealed by the corresponding rates of Madras, the infant mortality rates of Kerala for the decades 1911-20 and 1921-30 have been estimated. The Registrar-General of India has estimated the value of infant mortality rates for the decade 1951-60 as 120 for both sexes in respect of Kerala and the same figure has been adopted for the life tables 1951-60.

Period	*Infant mortality rates*	
	Males	*Females*
1911-20	244	240
1921-30	220	200
1931-40	184	162
1941-50	160	145
1951-60 (15)	120	120

(14) (15) Ibid.

By applying osculatory interpolation formula to the five year survival probabilities, the values of P5 and P6 are first calculated. Using P5 and P6 the values of l_0, l_1, l_2 and l_4 are found out by fitting the equation $l_x = A + Hx + Bc^x + \frac{n}{nx+1}$ by following the same procedure adopted by the 1951 census Actuary (16). From l_0, l_1 etc. the values of q_1, q_2, q_3, and q_4, are obtained.

4.4. For the decades 1911-20, 1921-30 and 1951-60 abridged life tables have been constructed by adopting the method of Reed and Merrel (17). The calculated values are given in the tables appended. Cols. 1, 2 and 3 of the life tables give the age intervals, corresponding mortality rates and the survival probabilities already derived for each decade. Col. 4 shows the number of persons attaining the lower limit of the age interval out of a cohort of 10,000 live births. Col. 5 is the cumulative total of Col. 4 from the end of life to age x. Col. 6 gives the total number of years of life remaining to survivors at age x. Tx has been obtained by the following formula for x = 10, 15, 20 etc.

$Tx = 0.20833\ lx\text{-}5 + 2.50000\ lx + 0.20833\ lx{=}5.$

For getting T5, T2, T1 and T0, the number of persons living in the age groups 5-9, 2-4 and at ages 1 and 0 are first calculated using the following relationships.

$5L_5 = -0.003\ L0 + 2.242\ L5 + 2.761\ L10$

$3L_2 = -0.021\ L0 + 1.384\ L2 + 1.637\ L5$

$L_1 = 0.410\ L0 + 0.590\ L2$

$L_0 = 0.276 + L. - 0.724\ L_1$

The value of T5 has been obtained by adding 5L5 to T10 and so on. Column 7 gives the average expectation of life $e\ ^{o}x$. This is obtained by dividing column 6 by Col. 7.

(16) S. P. Jain. Life tables—1951 census, census of India paper No. 2, 1954.

(17) Lowell J. Reed and Margerett Merrell, "A short Method for constructing an Abridged life table; The American Journal of Hygiene Volume 30 No. 2 September 1939.

Table No. 1

Abridged Life table for Kerala for the decade 1911—20

MALES

x	p_x	q_x	l_x	$\underset{c=o}{\overset{\infty}{M}} l_{x+c}$	T_x	$\overset{o}{e}_x$
0	0.75600	0.24400	100000	..	2548882	25.49
1	0.93446	0.06554	75600	..	2466548	32.63
2—4	0.91732	0.08268	70645	..	2400936	33.99
5—9	0.91288	0.08712	64804	..	2199179	33.94
10—14	0.91676	0.08324	59158	..	1890853	31.96
15—19	0.93117	0.06883	54234	349032	1607771	29.64
20—24	0.93981	0.06019	50501	294798	1346326	26.66
25—29	0.91869	0.08131	47461	244297	1101395	23.21
30—34	0.88561	0.11439	43602	196836	873332	20.03
35—39	0.86028	0.13972	38614	153234	667296	17.28
40—44	0.83847	0.16153	32377	114620	489769	15.13
45—49	0.79020	0.20980	27147	82243	341071	12.56
50—54	0.70178	0.29822	21452	55096	219331	10.22
55—59	0.64211	0.35789	15055	33644	128127	8.51
60—64	0.55461	0.44539	9667	18589	66758	6.91
65—69	0.45637	0.54363	5361	8922	29703	5.54
70—74	0.35207	0.64793	2447	3561	10750	4.39
75—79	0.24928	0.75072	862	1114	..	..
80—84 ..	0.15745	0.84255	215	252	..	..
85—89 ..	0.07819	0.92181	34	37	..	..
90—94 ..	0.07208	0.92792	3	3	..	..
95+ ..	0.00000	1.00000	..	..	..	..

Table No. 2

Abridged Life table for Kerala for the decade 1911—20

FEMALES

0	0.76000	0.24000	100000	..	2741194	27.41
1	0.95066	0.04934	76000	..	2658570	34.98
2—4	0.93430	0.06561	72250	..	2584782	35.78
5—9	0.94217	0.05783	67510	..	2376374	35.20
10—14	0.94743	0.05257	63606	..	2049700	32.22
15—19	0.93582	0.06418	60262	378439	1740038	28.87
20—24	0.90952	0.09048	56394	318177	1448031	25.68
25—29	0.87836	0.12164	51291	261783	1178325	22.97
30—34	0.85987	0.14013	45052	210492	937215	20.80
35—39	0.85333	0.14667	38739	165440	727854	18.79
40—44	0.84399	0.15601	33057	126701	548604	16.60
45—49	0.81440	0.18560	27900	93644	366317	14.20
50—54	0.74620	0.25380	22722	65744	269635	11.87
55—59	0.69289	0.30711	16955	43022	170436	10.05
60—64	0.62678	0.37322	11748	26067	98967	8.42
65—69	0.55165	0.44835	7363	14319	51586	7.01
70—74	0.46887	0.53113	4062	6956	23488	5.78
75—79	0.38119	0.61881	1905	2894	..	..
80—84	0.29285	0.70715	726	989	..	..
85—89 ..	0.20935	0.79065	213	263	..	..
90—94 ..	0.13653	0.86347	45	50	..	..
95+ ..	0.00000	1.00000	5	5	..	..

Table No. 3

Abridged Life table for Kerala for the decade 1921-30

MALES

x	p_x	q_x	l_x	$\sum_{c=0} l_{x+^c}$	T_x	$\overset{0}{e}_x$
0	0.78000	0.22000	100000	..	2953651	29.54
1	0.93533	0.06467	78000	..	2869579	36.79
2—4	0.91877	0.08123	72596	..	2794555	38.30
5—9	0.92068	0.07932	67030	..	2585956	38.58
10—14	0.94207	0.05793	61713	..	2265585	36.71
15—19	0.95787	0.04213	58138	422631	1966555	33.83
20—24	0.96503	0.03497	55689	364493	1682327	30.21
25—29	0.94188	0.05812	53742	308804	1408609	26.21
30—34	0.90910	0.09090	50619	255062	1147153	22.66
35—39	0.88122	0.11878	46018	204443	905073	19.67
40—44	0.84944	0.15056	40552	158425	688334	16.97
45—49	0.81657	0.18343	34446	117873	500662	14.53
50—54	0.75942	0.24058	28128	83427	345405	12.28
55—59	0.70583	0.29417	21361	55299	220374	10.32
60—64	0.63792	0.36208	15077	33938	129551	8.59
65—69	0.55985	0.44015	9618	18861	68241	7.10
70—74	0.47305	0.52695	5385	9243	31279	5.81
75—79	0.38063	0.61937	2547	3858	..	..
80—84	0.28753	0.71247	969	1311	..	..
85—89	0.20021	0.79979	279	342	..	..
90—94	0.12549	0.87451	56	63	..	..
95+	0.00000	1.00000	7	7		..

Table No. 4

Abridged Life table for Kerala for the decade 1921—30

FEMALES

0	0.80000	0.20000	100000	..	3270243	32.70
1	0.95158	0.04842	80000	..	3186171	39.82
2—4	0.93546	0.06454	76126	..	3111147	40.87
5—9	0.95287	0.04713	71213	..	2902548	40.76
10—14	0.97038	0.02962	67857	..	2555835	37.67
15—19	0.96991	0.03009	65847	477462	2221861	33.74
20—24	0.95088	0.04912	63866	411615	1897344	29.71
25—29	0.92122	0.07878	60729	347749	1585272	26.10
30—34	0.89653	0.10347	55945	287020	1293035	23.11
35—39	0.88535	0.11465	50156	231075	1027581	20.49
40—44	0.86717	0.13283	44406	180919	791153	17.82
45—49	0.82910	0.17090	38508	136513	583695	15.16
50—54	0.76985	0.23015	31927	98005	407306	12.76
55—59	0.72289	0.27711	24579	66078	265993	10.82
60—64	0.65739	0.34261	17768	41499	160387	9.03
65—69	0.58142	0.41858	11681	23731	87166	7.46
70—74	0.49608	0.50392	6792	12050	41538	6.12
75—79	0.40405	0.59595	3369	5258	..	..
80—84	0.30991	0.69009	1361	1889	..	..
85—89	0.21995	0.78005	422	528	..	..
90—94	0.14119	0.85881	93	106	..	..
95+	0.00000	1.00000	13	13	..	..

Table No. 5

Abridged Life table for Kerala for the decade 1951-60

MALES

x	p_x	q_x	l_x	$\sum_{c=0}^{\infty} l_{x+c}$	T_x	e_x^o
0	0.88000	0.12000	100000	..	4617123	46.17
1	0.96978	0.3022	88000	..	4525811	51.43
2—4	0.96602	0.03398	85341	..	4439380	52.02
5—9	0.97180	0.02820	82441	..	4188413	50.80
10—14	0.98260	0.01740	80116	..	3782680	47.22
15—19	0.98639	0.01361	78722	716633	3385846	43.01
20—24	0.98055	0.01945	77651	637911	2861494	36.85
25—29	0.97177	0.02823	76141	560260	2610185	34.28
30—34	0.96438	0.03562	73992	484119	2234618	30.20
35—39	0.94984	0.05016	71356	410127	1870950	26.22
40—44	0.92483	0.07517	67777	338771	1522605	22.47
45—49	0.89394	0.10606	62682	270994	1195819	19.08
50—54	0.85809	0.14191	56034	208312	898433	16.03
55—59	0.79902	0.20098	48082	152278	637517	13.26
60—64	0.73884	0.26116	38418	104196	420832	10.95
65—69	0.66479	0.33521	28385	65778	253855	8.94
70—74	0.57651	0.42349	18870	37393	136143	7.22
75—79	0.47570	0.52430	10879	18523	..	..
80—84	0.36705	0.63295	5175	7644	..	..
85—89	0.25873	0.74127	1899	2469	..	..
90—94	0.16142	0.83858	491	570	..	..
95+	0.00000	1.00000	79	79	..	..

Table No. 6

Abridged Life table for Kerala for the decade 1951-60

FEMALES

0	0.88000	0.12000	100000	..	5000287	50.00
1	0.97017	0.02983	88000	..	4908975	55.78
2—4	0.96762	0.03238	85375	..	4822524	56.49
5—9	0.97662	0.02338	82611	..	4571231	55.33
10—14	0.99001	0.00999	80680	..	4163560	51.60
15—19	0.99312	0.00688	79874	792486	3762463	47.11
20—24	0.98258	0.01742	79324	712612	3364348	42.41
25—29	0.97467	0.02533	77942	633288	2970886	38.11
30—34	0.96955	0.03045	75968	555346	2585917	34.04
35—39	0.95434	0.04566	73655	479378	2211570	30.03
40—44	0.93672	0.063328	70292	405723	1851258	26.34
45—49	0.91729	0.08271	65844	335431	1510484	22.94
50—54	0.88683	0.11317	60398	269587	1194381	19.78
55—59	0.85892	0.14108	53563	209189	909039	16.97
60—64	0.81715	0.18285	46006	155626	659788	14.34
65—69	0.76482	0.23518	37594	109620	450521	11.98
70—74	0.70048	0.29952	28753	72026	284611	9.90
75—79	0.62333	0.37667	20141	43273	..	..
80—84	0.53386	0.46614	12554	23132	..	..
85—89	0.43460	0.56540	6702	10578	..	..
90—94	0.33072	0.66928	2913	3876	..	..
95+	0.00000	1.00000	963	963	..	..

5. MIGRATION AND POPULATION GROWTH IN KERALA

By

K. C. ZACHARIAH*

Demographic Training & Research Centre
Chembur, Bombay-71

1. Introduction:

Kerala, the southernmost State of the Indian Union, has certain unique demographic features which distinguish it from the other States of the Union. This State is the smallest in the country in terms of area, but is the densest in terms of population. It has an area of about 15,000 square miles which is less than the area of any other State[1] in the Union. It had a population of 16.9 million in 1961 which was more than the population of Jammu and Kashmir, and of Assam, and is only a little less than the population of Orissa. Kerala occupies only 1.2 per cent of the total area of the country but is inhabited by more than 3.8 per cent of the total population. As a result, it is one of the most densely populated areas of the country (1,127 persons per square mile) leading all the other States in average density. Its nearest rival in density is West Bengal with an average density of 1021 persons per square mile.

The sex ratio of Kerala's population (979 males per 1,000 females in 1961) is one of the lowest in the country and Kerala shares with Orissa the distinction of being the only two States in India where more females than males were enumerated in the 1961 census. The educational attainments of the population of the State is not surpassed by any other State, either in 1961 or in any of the previous years. In the 1961 census, among persons aged 5 years and over, more than 64 per cent of males and 45 per cent of females were literate. Madras, its neighbour and next in order, had only 52 per cent of males and 21 per cent

*The author is thankful to the Registrar General of India, for providing the unpublished census data used in this paper.

K. S. Seetharam, Technical Assistant at the Demographic Training and Research Centre, Bombay assisted in the preparation of this paper.

1 For the purpose of this paper Union Territories are not considered as "States".

of females, literate. The industrial attachment of Kerala's population is characterised by relatively low proportion of cultivators and high percentage of service personnel. In India as a whole about 51 per cent of male workers were cultivators in 1961 but in Kerala only 23 per cent were in that category. The proportion of male workers in non-household manufacturing in Kerala was double that among all-India male workers. In services also Kerala workers had about 15 percentage points more than the all-India workers.

The uniqueness of the demography of Kerala is evident also in the settlement patterns and distribution of population. While about 5 per cent of the villages in Kerala are of size less than 2,000 persons nearly 95 per cent of villages in India are in this size range. Some differences are also noticed in the distribution of towns. In Kerala there is one town for every 163 square miles of the State, but in India as a whole, the density of town is only one in 455 square miles. These differences in the pattern of population distribution suggest that the pattern of population redistribution may also be unique for Kerala. However, we have few studies to show in what ways **redistribution** affecting Kerala's population resemble the pattern in other States in the country, and in what ways they differ. It is widely believed that "keralites" are a highly migratory community, and that in pursuit of subsistence they have moved into every corner of India and other countries in Asia. The statistics of the first half of this century suggest that this belief is somewhat exaggerated and that it is based on isolated observations in large cities like Madras, Bombay, Delhi and Calcutta, where a number of "malayalee" stenographers, typists and clerks are employed. The "conspicuousness" of their jobs gives an exaggerated picture of their numerical strength. Until the statistics are examined, one may not quite believe that Kerala has been a net in-migrating State till very recently, that out-migration of "malayalees" is a recent phenomenon, and that the migrants from Kerala are highly selective with respect to their demographic, social and economic characteristics.

This paper is concerned with a historical analysis (using census data) of migration to and from Kerala. The object is to examine how far migration has swelled or diminished population of the State and how far the movements, in and out, have contributed to the economic and social development of the area.

II. Components of Population growth in Kerala:

In the beginning of the century, the population of Kerala was only about 6.4 million. During the last 60 years, the population increased at an average rate of 16 per cent per decade. The rate of increase was only about 12 per cent during 1901-1911 (Table 1), but it rose to more than double that figure by the end of the 60 year period. In general, the rate increased with succeeding decades, but there were setbacks during 1911-1921, and again during 1931-41.

The total growth of an area during a given period is composed of natural increase and net migration during that period. In certain decades the net migration to Kerala reinforced the natural increase in the State and as a result the total growth was more than the natural increase. In other decades, the gains due to natural increase was partly eliminated by migration. These details, as far as they could be estimated from available census data, are given in Table 2. It appears that Travancore-Cochin (and probably Kerala too) had not gains of population through migration till 1931, and net losses during the decades following 1931. The total gain during the first 3 decades was only 97,000 and was slightly more among females than among males; but the total loss during 1931-61, amounting to several times the gain in the first half, was very much more among males.

Table 1 Population Growth in Kerala, 1901-1961

Year	*Population*	*Intercensal increase*	*Percentage increase*
1901	6,396,262	..	..
1911	7,147,673	+751,411	+11.75
1921	7,802,127	+654,454	+ 9.16
1931	9,507,050	+1,704,923	+21.85
1941	11,031,541	+1,524,491	+16.04
1951	13,549,118	+2,517,577	+22.82
1961	16,903,715	+3,354,597	+24.76

Source: *Census of India* 1961, Vol. I, Part II(A)(i), General Population Tables, Table A-II, pp. 181-182.

In general, migration contributed only little to the total population growth of the State in any of the decades. The maximum contribution was during 1951-61, when, but for the out-migration of 285,000 persons, the rate of population growth would have been more by about 1.9 per cent. The observed growth rate among males was 22.3 in this decade; it would have been nearly 25 per cent, if the State had not lost about 200,000 males through migration.

Table 2. Components of Population Growth, Travancore-Cochin 1901-1951, And Kerala 1951-1961

VOLUME

Area and period	*Males*			*Females*		
	Total	*N.I.*	*N.M.*	*Total*	*N.I.*	*N.M.*
Travancore-Cochin.						
1901-1911	293,711	290,559	3,152	289,947	282,557	7,390
1911-1921	326,940	319829	7,111	311,463	299,700	11,763
1921-1931	639742	606,532	33,210	676,953	642,206	34,747
1931-1941	587,340	595,762	—8,422	604,962	601,567	3,395
1941-1951	875,386	935,477	—60,091	904,982	935,632	—30,650
Kerala						
1951-1961	1,680,026	1,879,562	—199,536	1,674,571	1,760,088	—85,517

Rate per 100 average population

Area and period	*Males*			*Females*		
	Total	*N.I.*	*N.M.*	*Total*	*N.I.*	*N.M.*
Travancore-Cochin						
1901-1911	14.37	14.21	—0.16	14.38	14.01	+0.37
1911-1921	13.88	13.58	—0.30	13.44	12.93	+0.51
1921-1931	22.54	21.37	—1.17	24.08	22.84	+1.24
1931-1941	17.02	17.26	—0.24	17.52	17.43	+0.09
1941-1951	20.93	22.36	—1.43	21.51	22.24	—0.77
Kerala						
1951-1961	22.34	24.99	—2.65	21.73	22.84	—1.11

N.I.—Natural increase, N.M.—Net migrants

III. Growth of Towns in Kerala:

In 1961, there were 92 towns in Kerala with a total population of 2.554 millions. Ten years ago the number of towns was 94 with a total population of 1.826 millions. The increase of 728,000 persons during this period was the net result of (i) addition of 27 new towns with a total population of 264,415 persons, (ii) elimination of 37 localities which were

towns in 1951 with a total population of 240,302 persons in 1951, (iii) natural increase, (iv) urban-ward migration, and (v) annexation of new areas to some of the towns during 1951-61. If we consider the 92 localities which were towns in 1961, we may estimate that together they had a population of 1.883 millions in 1951 and 1.385 millions in 1941. Assuming that the natural increase in these towns was the same that in the State as a whole we may estimate that the total natural increases in the urban areas were 364,000 during 1941-51 and 531,000 during 1951-61. Consequently, the net effect of migration and annexation of areas to the urban areas was approximately 133,000 persons during 1941-51, and 141,000 persons during 1951-61.

The combined effect of migration and annexation on the growth of towns can be analysed further in terms of the contribution of each of the 9 districts in the State as shown in Table 3. An examination of the growth of population in individual towns shows that the effect of annexation was probably high in some of the districts like Alleppey during 1941-51 and in Ernakulam during 1951-61. Between the two decades, it appears, that the effect of annexation was relatively greater during 1951-61. We may therefore conclude that migration to towns in Kerala was not very extensive either during 1941-51 or 1951-61. There was little acceleration in the rural-urban migration during the last 20 years. Several urban centres

Table 3. Population increase due to Annexation and migration to Towns in Kerala, by Districts, 1941-51 and 1951-61

	1941-1951		1951-1961	
	Males	*Females*	*Males*	*Females*
Kerala	63,737	69,613	60,541	80,452
1. Alleppey	14,726	17,390	16,300	23,431
2. Cannanore	8,172	10,804	—15,394	—15,303
3. Ernakulam	—393	1,510	36,777	38,082
4. Kottayam	5,011	6,158	—5,446	—3,042
5. Kozhikode	19,803	20,534	11,769	12,994
6. Palghat	4,695	1,985	12,301	—12,450
7. Trichur	—3,238	—1,968	—3,778	—2,994
8. Trivandrum	11,336	10,910	28,816	33,898
9. Quilon	3,625	2,290	3,798	5,836

in the State did not receive any significant number of rural migrants and quite a few actually lost population through migration. Towns in the northern part of the State, Cannanore and Palghat districts in particular, seem to have experienced fairly significant out-migration during the last 10 years.

IV. Spatial origin of Migrants to, and Destination of Migrants from Kerala:

About 233,000 persons born outside Kerala were enumerated within the State in the 1961 census. As against this, 618,000 persons born in Kerala were enumerated outside giving a balance of 385,000 against the State. The sex breakdown and State of origin of life-time in-migrants and State of destination of life-time out-migrants in 1961 are indicated in Table 4. Of the 123,000 male in-migrants 101,000 or 82 per cent were born in the neighbouring Madras State; 10,000 or 8 per cent were born in Mysore; and 3 per cent in Maharashtra. Thus, nearly 95 per cent of life--time in-migrants in Kerala were born in the four States Madras, Mysore, Maharashtra and Gujarat. The concentration of the origin of in-migrants was even greater among females. The contribution of Madras was 83 per cent, of Mysore was 11 per cent; but that of Maharashtra was a little less (2 per cent). Out-migrants from Kerala had also clustered in the neighbouring States, but their concentration was very much less compared to that of in-migrants. Thus among males, only 40 per cent of total out-migrants were enumerated in Madras; 23 per cent were enumerated in Mysore; 18 per cent in Maharashtra;; 4 per cent in Andhra Pradesh; and 4 per cent in Madhya Pradesh. Among females, Madras had a higher share. Nearly 53 per cent of female out-migrants from Kerala were enumerated in Madras; 21 per cent in Mysore; 12 per cent in Maharashtra; 3 per cent in Andhra Pradesh; and 2 per cent each in Madhya Pradesh and West Bengal.

As a result of the exchange of population with other States, Kerala had a life-time net loss of 385,000 people. This overall loss of Kerala resulted in gains in practically every State in the Union, though the gains of some States were much greater than those

of others. Thus nearly 29 per cent of the net loss of males was accounted for by the gains in Mysore, and 24 per cent by Maharashtra. Madras's net gain was only 22 per cent even though its gross gain was the largest and amounted to 40 per cent of the total. The other States which had significant gains were Andhra Pradesh, Madhya Pradesh and West Bengal. In the case of females also, the greatest gain (33 per cent) was made by Mysore, followed by Maharashtra (23 per cent) and Madras (22 per cent). Andhra Pradesh gained 6 per cent of the total and Madhya Pradesh and West Bengal 3 per cent each.

Table 4. State of Birth of Life Time in Migrants in Kerala and State of Enumeration of Life Time Out-Migrants from Kerala 1961

MALES

	State	*State of birth of in-migration*	*State of enumeration of out-migration*	*Difference*
1.	Andhra Pradesh	1,105	17,513	—16,408
2.	Assam	69	1,807	—1,738
3.	Bihar	224	4,170	—3,946
4.	Gujarat	2,367	5,812	—3,445
5.	Jammu & Kashmir	78	145	—67
6.	Madhya Pradesh	377	14,386	—14,009
7.	Madras	101,031	162,331	—61,300
8.	Maharashtra	3,383	71,325	—67,942
9.	Mysore	9,654	90,780	—81,126
10.	Orissa	105	3,641	—3,536
11.	Punjab	847	3,315	—2,468
12.	Rajasthan	150	1,348	—1,198
13.	Uttar Pradesh	726	4,328	—3,602
14.	West Bengal	580	9,063	—8,483
15.	Union Territories	2,010	11,698	—9,688
	Total	122,706	401,662	—278,956

FEMALE

	State	*State of birth of in-migration*	*State of enumeration of out-migration*	*Difference*
1	Andhra Pradesh	857	7,385	—6,528
2.	Assam	46	375	—329
3.	Bihar	174	2,965	—2,791
4.	Gujarat	776	2,037	—1,261
5.	Jammu & Kashmir	35	49	—14
6.	Madhya Pradesh	309	3,862	—3,555
7.	Madras	91,256	114,187	—22,931
8.	Maharashtra	2,309	26,769	—24,460
9.	Mysore	11,732	46,440	—34,708
10.	Orissa	55	621	—566
11.	Punjab	305	649	—344
12	Rajasthan	75	649	—574
13.	Uttar Pradesh	300	1,345	—1,045
14.	West Bengal	304	3,356	—3,052
15.	Union Territories	2,006	4,392	—3,386
	Total	110,539	216,081	—105,542

Source: Unpublished Census Tables, 1961, D-II.

In earlier years in-and out-migrants were relatively fewer and the range of migration was more limited to nearby States. Thus in 1951, the erstwhile Travancore-Cochin had a life-time in-migration of 194,000 and a life-time out-migration of 207,000 (Table 5). Nearly 97 per cent of in-migrants were born in Madras and 82 per cent of the out-migrants were enumerated in that State. In 1911*, the total in-migrants were only about 82,000 and the total out-migrants only 21,000. The contribution of Madras was 97 per cent in the case of in-migrants, and 94 per cent in the case of out-migrants. Thus it seems that over the 60 year period 1901-61 both the in-migrants and out-migrants increased considerably, but the rate of increase of the number of out-migrants was much greater than that of in-migrants.

Table 5. Life-time in, and out-Migration of Travancore-Cochin by Sex, 1901-1951

IN-MIGRANTS

States	*Sex*	1901	1911	1921	1931	1941	1951
Madras	Males	37,698	40,159	41,293	78,082	80,314	88,513
	Females	36,006	39,849	43,372	80,883	87,618	100,003
Mysore	Males	200	244	228	201	257	876
	Females	114	147	165	316	206	473
Bombay	Males	3,465	818	567	976	824	1,087
	Females	1,503	458	471	563	384	831
Others	Males	1,532	392	402	475	534	1,907
	Females	518	159	156	126	440	416
Total	Males	42,895	41,613	42,490	79,734	81,929	92,383
	Females	38,141	40,613	44,164	81,888	88,648	101,723

OUT-MIGRANTS

States	*Sex*	1901	1911	1921	1931	1941	1951
Madras	Males	8,425	10,974	10,667	18,594	..	93,546
	Females	7,619	9,115	7,750	12,982	..	76,578
Mysore	Males	88	271	500	751	1,409	8,277
	Females	38	152	271	309	777	3,514
Bombay	Males	..	352	459	1,188	..	11,531
	Females	..	174	168	2,503	..	3,741
Others	Males	2	192	789	1,931	..	7,133
	Females	..	77	269	2,782	..	2,632
Total	Males	8,515	11,789	12,415	22,464	..	120,487
	Females	7,657	9,518	8,458	18,576	..	86,465

Source: *Census of India* 1901 through 1951.

*1901 data are not detailed enough for such a discussion.

In the past, the major source of in-migration to Kerala has been Madras, and its importance remained more or less constant until 1951 when it decreased a little because of the growing importance of other States. Madras was also the principal destination of out-migrants from the State, but its importance as an area of destination decreased much faster than its importance as an origin of migrants.

V. Characteristics of Migrants:

Sex Composition.—The in-migrants to Kerala had a more balanced sex composition than the out-migrants from the State. In 1961, the sex ratio among lifetime in-migrants was 1,110 compared to a value of 1,859 among life-time out-migrants. Somewhat similar pattern prevailed in the previous census years also. In-migrants to Travancore-Cochin had an excess of females in 1921, 1931, 1941 and 1951, but the out-migrants had relatively high sex ratios in all the census years (Table 6). Over the fifty year period the sex ratio of in-migrants (to Travancore-Cochin) decreased, and of out-migrants on the whole increased.

Table 6. Sex Ratio (Males per 1000 Females) of Life time in- and out Migrants, Travancore-Cochin 1901-1951, and Kerala 1961

Area and year	*In-migrants*	*Out-migrants*
Travancore-Cochin		
1901	1,125	1,112
1911	1,025	1,239
1921	962	1,468
1931	974	1,209
1941	924	..
1951	908	1,393
Kerala		
1961	1,110	1,859

Source: Table 4 and Table 5.

Analysis of the sex ratio of migration streams to and from Kerala shows that, in general the nearer a State of origin (or destination) the lower is the sex ratio. Thus Madras-born in-migrants have a more balanced sex composition (1,107) than Maharashtra-born (1,465). Among out-migrants although the overall ratio is higher it is relatively lower among those enumerated in Madras (1,422) compared with those enumerated in distant States such as Maharashtra (2,664) or West Bengal (2,701).

Age Composition.—The age composition of lifetime in-or out-migration is not available for any of the census years, but that of net intercensal migration may be inferred by the census survival ratio method. The age-sex distribution of net migration to Kerala during 1951-61 is shown in Table 7. During 1951-61 though Kerala was an out-migrating State, the loss of population was confined to selected age groups. This was perhaps true in some of the earlier decades also. Net out-migration was heaviest around

Table 7. Net intercensal migration to Kerala by age and sex 1951-1961

(in thousands)

Age in 1961	*Total*	*Males*	*Females*
0—4	—27	—14	—13
5—9	—152	—77	—75
10—14	+149	+29	+120
15—19	+162	+47	+115
20—24	—50	—28	—22
25—29	—267	—124	—143
30—34	—215	—108	—107
35—39	—24	—9	—15
40—44	+31	+21	+10
45—49	+20	+14	+6
50—54	+20	+11	+9
55—59	+16	+8	+8
60—64	+8	+6	+2
65—69	+10	+7	+3
70+	+35	+18	+17
All ages	—284	—199	—85

age 20-24 years (that is among people who were 25-29 years in 1961). At ages above 40 years there were no losses at all; in fact the State gained through migration in each of the higher age groups. There were also appreciable gains in the age groups 10-19 years (these persons might have been 5-14 years when they in-migrated). The age patterns of net male and female migrants show substantial similarity. Among both the sexes, there were losses at ages 20-39 years and again at ages 0-9 years, and gains in all other age groups.

Industrial Classes.—The difference in the industrial classes of migrants and the general population in Travancore-Cochin in 1951 are shown in Table 8*. It is evident that migrants are engaged predominantly

*Such data exist for 1961 also, but they were not available to the author at the time of writing this paper.

in non-agricultural occupations such as "production other than cultivation" and "services", and the non-migrants as owner cultivators, cultivating labourers, and also in production other than cultivation. Between the in-migrants and out-migrants also there are significant differences. Nearly half of the in-migrants are engaged in "production other than cultivation" (plantation labour) and about one-fifth in services. On the other hand, Travancore-Cochin migrants outside the State were predominantly engaged in service (one-third of males and one-fourth of females) and much less in "production other than cultivation". They are also relatively over-represented among non-owner cultivators. Among the migrants enumerated in Madras 21 per cent of males and 23 per cent of females earned their livelihood as non-owner cultivators of land.

Table 8. Industrial Classes of migrants and general population, Travancore-Cochin, 1951

Industrial Classes	*Males*			*Females*		
	General Population	*Out migrants*	*In migrants*	*General Population*	*Out migrants*	*In migrants*
Owner Cultivators	26.18	7.80	3.05	26.49	10.03	5.89
Non-owner cultivators	7.20	16.80	2.51	7.01	21.20	5.44
Cultivating labourers	20.08	7.83	9.80	20.25	8.79	12.94
Non-cultivating owners of land	1.08	1.3	1.40	1.40	1.11	2.62
Production other than cultivation	21.12	20.64	50.60	21.26	20.92	45.59
Commerce	7.07	9.18	7.93	6.53	7.34	6.22
Transport	3.61	3.92	3.78	3.21	4.04	2.86
Services	13.66	32.77	20.93	13.84	26.56	18.44

Source: *Census of India* 1951, Vol. I, Part II-A, Demographic Tables, pp. 260,297.

We have little information on the marital status, educational attainments, occupation, religion, and similar other characteristics of in-migrants to Kerala or out-migrants from the State. In the 1961 census, the occupation and educational attainment of migrants enumerated in "one lakh towns" of the State were tabulated. Similarly, extensive tabulation of the characteristics of Kerala-born migrants in "million cities" outside the State have also been made. Except

for those on Kerala-born in Greater Bombay these data have, however, not been readily available to us. As a case study of Kerala migrants in "million cities", we give below a detailed analysis of the characteristics of Kerala migrants enumerated in Greater Bombay in 1961.

VI. Kerala-born Migrants in Greater Bombay:

According to the 1961 census, there were in Greater Bombay 73,597 persons born in Kerala. They constituted more than three-fourths of the total Kerala migrants enumerated in Maharashtra as a whole. Such concentration in metropolitan centres is probably found in other States also. However, compared to the total migrants in Greater Bombay, those from Kerala formed only a small proportion, 2.8 per cent. Kerala migrants were not uniformly distributed in the City but were concentrated in a few selected localities. Thus in upper Colaba area the percentage of Kerala-born was as high 13.1 in Matunga 10.7; in Juhu 11.4; and in Chembur it was 10.3.

Compared to other migration streams in Bombay the Kerala-born were of recent origin. The average duration of residence of these migrants was 8.7 years, compared to 12.4 for Gujarat--born or 10.1 of Uttar Pradesh-born migrants in Greater Bombay. The number of Kerala-born in Bombay had shown rapid increase in recent years: from 13,000 in 1951 to 74,000 in 1961. A part of the increase is due to boundary changes at origin (from Travancore-Cochin to Kerala) because the areas which the erstwhile Travancore-Cochin lost in the State reorganisation of 1956 did not send any migrants to Bombay, but those which it gained from Madras—Malabar district —was an important source of migration to Bombay. Thus the real increase in the number of in-migrants in Bombay, which may also be substantial, is confounded with the effect of boundary changes.

In 1961, nearly 73 per cent of the Kerala-born in Bombay were males giving a sex ratio of 2,712 males per 1,000 females. In the past also the sex

ratio had been quite high, the only exception being the year 1931 when there were only 439 males per 1,000 females. The sex ratio among Kerala-born was one of the highest among the various migration streams in the City, being exceeded only by the Uttar Pradesh-born migrants. As with all other migration streams in Bombay, the sex imbalance was extremely high in the working ages (Table 9).

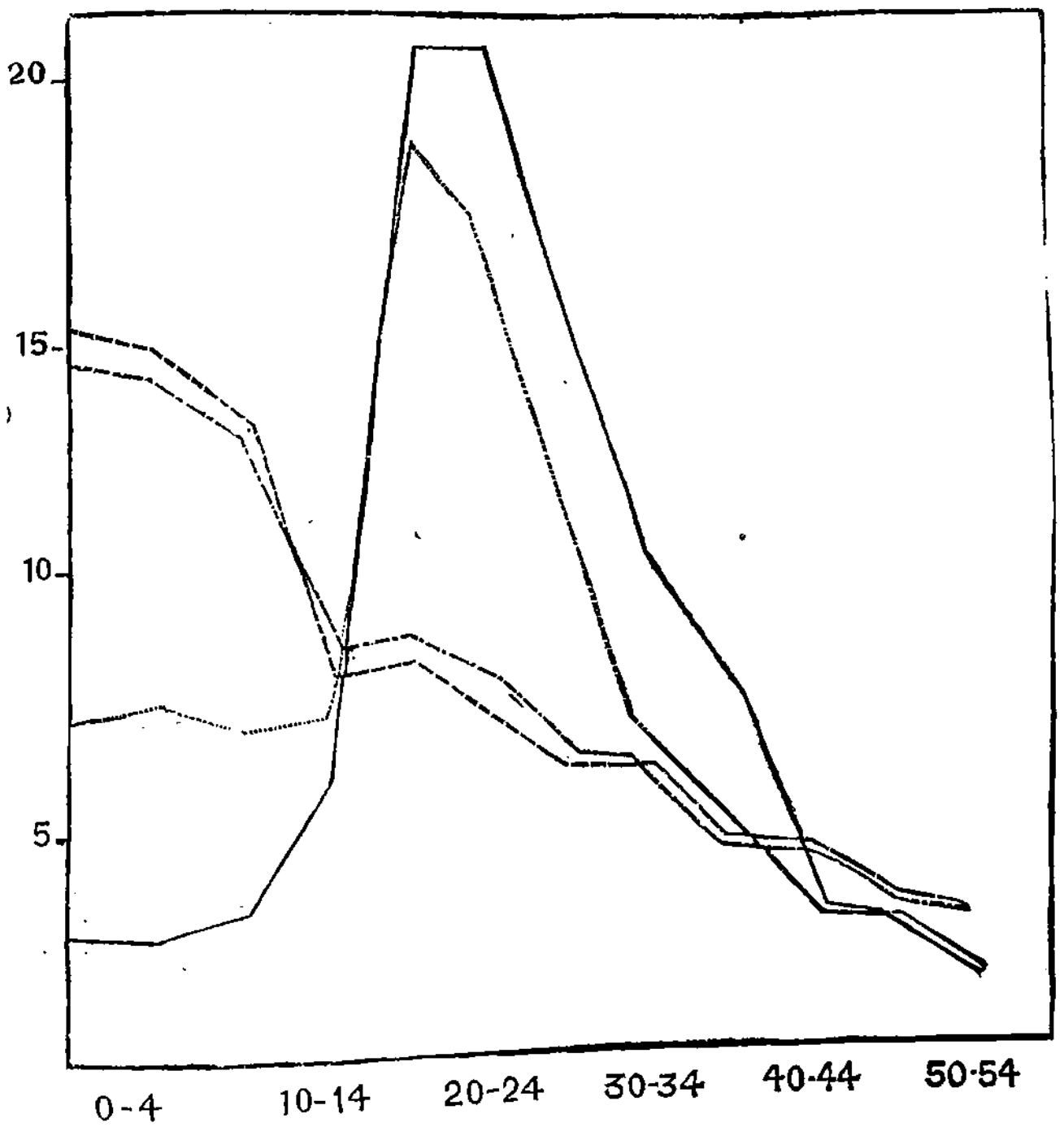
Table 9. Sex ratio (Males per 1000 Females) of migrants in greater Bombay, by age, 1961

Age	*Migrants from Kerala*	*All migrants*
All ages	2,712	1,810
0—4	1,073	1,045
5—9	1,104	1,040
10—14	1,353	1,259
15—19	2,256	1,783
20—24	2,863	1,905
25—29	3,261	1,930
30—34	3,740	2,136
35—44	4,265	2,351
45—59	2,694	2,015
60+	1,278	1,210

Source: Special Migration Table II, Greater Bombay 1961.

The age distribution of Kerala migrants shows extreme concentration at young adult ages. A comparison of the out-migrants (to Bombay) and the native population (enumerated in Kerala) is shown in Chart 1. The concentration at ages 20-24 among Kerala migrants is greater than that among any other migration stream in Greater Bombay.

Chart 1—Percentage distribution of the population of Kerala and of Migrants in Greater Bombay from Kerala, by Sex, 1961.



In Kerala, about 61 per cent of the population are Hindus, 18 per cent Muslims, 21 per cent Christians. Among the migrants 64 per cent of the males and 71 per cent of the females were Hindus; 18 per cent of the males and 5 per cent of the females were Muslims; and 18 per cent of the males and 23 per cent of the females were Christians. Thus the proportion of Hindus among migrants was greater than that among the population at origin. This is contrary to the pattern among other migration streams in the City. Propensities to out-migrate (to Greater Bombay) were in general more among the minority religious groups. The lower propensities among Kerala minorities was greatest among Muslim women and Christian men.

Compared with all other migration streams from within the country, the Kerala-born had the highest educational attainment. On an average the male working migrants from Kerala had about 7.1 years of schooling compared with 4.2 years for all migrants combined. Similarly, the Kerala-born female workers had 7.9 years of schooling compared with only 3.0 years for all migrants together (Table 10).

Table 10. Distribution of migrant workers in Greater Bombay by Educational Categories, 1961

Educational categories	*Males*		*Females*	
	All streams	*Kerala-born*	*All streams*	*Kerala born*
Total	100.0	100.0	100.0	100.0
Illiterate	31.9	11.5	64.8	18.6
Literate without educational level	27.1	22.5	8.8	12.6
Primary of Junior basic	25.6	23.6	8.7	10.0
Matriculate	11.1	32.7	11.2	42.9
Diploma	0.4	0.9	1.0	5.6
Degree	3.9	8.8	5.6	10.3
Index	4.2	7.1	3.0	7.9

Source: Special Migration Table III, Greater Bombay, 1961

The educational attainments of the Kerala-born differed from other migration streams in Bombay not only in the overall level, but also in the distribution by categories. Thus, about a third (32.7 per cent) of the Kerala-born male working migrants and a little less than half (43.0 per cent) the number of females

were matriculates. Such large proportions of matriculates were not observed for any other streams, not even for the Pakistan-born who have on the whole a high level of educational attainment. Similarly, the proportion of illiterates among Kerala-born was considerably lower than that of any other migration stream. In the case of degree holders, however, both West Bengal and Pakistan had proportions higher than that of Kerala migrants.

Migrants from Kerala were engaged in most of the major industrial divisions but they were relatively more numerous in services (division 8) and light engineering industries (division 3). Nearly a third of the working males, and three-fourths of the working females from Kerala were engaged in service industries. The percentages in light engineering industries were 27.5 and 6.8 respectively among males and females. In none of the other industrial divisions the Kerala migrants had proportions higher than those of all migrants taken together (Table 11). Comparison between migrants born in Kerala and each of the other streams showed that the distribution of Kerala-born was most similar to that of West Bengal and Mysore and dissimilar to that of Andhra Predesh and Gujarat.

Table 11. Distribution of migrants in Bombay, by Major Industrial Divisions, 1961

Industrial Division	*Kerala migrants*		*All migrants*	
	Males	*Females*	*Males*	*Females*
Agriculture and mining	0.2	0.2	1.5	3.0
Textile manufacturing	10.9	3.6	23.1	17.4
Light engineering industries	27.5	6.8	19.0	10.0
Construction	1.1	0.7	2.7	4.2
Utilities	1.6	1.0	1.5	2.8
Commerce	15.7	6.1	18.3	10.1
Transport	10.5	6.8	11.6	6.2
Services	32.4	73.8	22.2	46.1

Source: Special Migration Table No. IV. Greater Bombay, 1961.

The industrial composition of every stream of migration in Bombay varied with the duration of its residence in the city. More than half of the Kerala-born male migrants who came to the city during

1960-61 had entered service industries, and 17 per cent had entered light engineering industries. On the other hand, among those who came before 1946, 31 per cent were in light engineering industries, 21 per cent each in commerce and services. These patterns suggest that either (i) those Kerala-born who entered service industries tended to out-migrate from Bombay after a few years residence in the city; or|and (ii) Kerala migrants who came to the city recently were not able to enter light engineering industries to the same extent as they did 10 or 15 years back.

The typical occupations of Kerala-born migrants in Bombay were clerical and related occupations, and service sport and recreations. As shown in Table 12 while about 12 per cent of all migrants were in clerical division (among males) 27 per cent of Kerala-born were in this occupational division. Similarly, while 14 per cent of all male migrants were in service sport and recreation occupations, 18 per cent of Kerala-born were in this division. Among females, Kerala-born had greater concentration in professional, technical and related occupations in addition to that in the clerical division, but no over-representation in service occupations.

As in the case of industrial composition, the occupational distributions were also markedly different for migrants with different durations of residence in the City. Recent migrants had relatively higher

Table 12. Distribution of migrants in Bombay by Major Occupational Division, 1961

Occupational division	*Males*		*Females*	
	Kerala born	*All migrants in Bombay*	*Kerala born*	*All migrants in Bombay*
Professional	5.6	4.1	38.4	13.3
Administrative	9.1	4.1	1.5	1.4
Clerical	27.3	12.4	22.3	7.8
Sales	9.1	12.8	1.1	7.4
Transport	4.4	4.3	1.2	0.9
Craftsmen	16.7	27.2	2.7	12.2
Labourers	9.9	19.8	8.2	24.2
Services	17.9	14.0	26.6	30.3

representation in administrative, executive and related occupations, and in services, while those who came to Bombay 15 years ago, had higher representation in clerical occupations, and among salesmen and craftsmen. These patterns suggest that the administrators and executives among the Kerala migrants in Bombay are mainly Government employees who are liable to be transferred from one place to another in short periods of time; that those who get into clerical and sales occupations or those who become craftsmen do so only after varying periods of unemployment or after engaging themselves in other types of occupations; and that the major opening wedge for a large number of Kerala migrants (particularly among the older of them) is some sort of personal service occupations.

VII—Implications of Kerala's Migration Pattern

Before proceeding to a discussion of some of the major implications of the migration pattern in Kerala we shall summarise the principal results derived in the previous sections.

In-migration to Travancore-Cochin occurred at an accelerated rate in the first quarter of the century, but the trend was not maintained after 1931; about 19,000 during 1901-1911, 23,000 during 1911-21, 92,000 during 1921-1931, 38,000 during 1931-1941 and 53,000 during 1941-1951. Kerala experienced an in-migration of about 108,000 during 1951-1961.

Out-migration from Travancore-Cochin occurred at an accelerated rate during the entire period under discussion; about 8,000 during 1901-11, 4,000 during 1911-21, 24,000 during 1921-31, 43,000 during 1931-41, and 143,000 during 1941-51. Kerala experienced an out-migration of 393,000 during 1951-61.

The rate of increase of out-migration was much higher than the rate of increase of in-migration. As a result, Kerala which was a net in-migrating area before 1931 became a net out-migrating area afterwards with the volume of net out-migration increasing with every decade.

The States of origin of in-migrants, and the States of destination of out-migrants have been mainly the neighbouring States such as Madras and Mysore. The source of in-migrants had a much limited geographic coverage than the destination of out-migrants. With time, the geographical range of both in-migrants and out-migrants had widened.

The proportion of population living in urban areas has increased from 13.5 per cent in 1951 to about 15.1 in 1961. In both these years the urban proportion in Kerala was much less than that in India as a whole. The increase of urban population was partly due to the annexation of new areas to existing towns and only in a limited way is a reflection of rural-urban migration. The available evidence does not support the existence of a spurt in the process of urbanisation in the State. On the contrary, towns in the northern parts of the State seem to be actually losing population through out-migration.

The in-migrants to the State had a more balanced sex composition than did the out-migrants from the State. Between 1951 and 1961 the sex ratio of both in-migrants and out-migrants increased, the former to a moderate figure of 1,110 and the latter to an abnormally high value of 1,859.

The indirect evidence on age composition suggest that, in-migrants to Kerala had a more 'normal' age distribution than did the out-migrants. Very probably in-migrants had low proportion of children, and fairly moderate heaping in young adult ages. On the other hand, out-migrants had very large proportions at young adult ages with disproportionately low number of childern aged 10-15 years and older persons above 40 years. As a result, the age distribution of net migration showed high negative values at ages below 10 years, very much higher negative values at young adult ages (20-39 years), heavy net in-migration at ages 10-19, and moderate gains at ages above 40 years.

In-migrants to Kerala were engaged predominantly in "production other than cultivation" (plantation industry) and in services, and out-migrants

from Kerala in services, and in cultivation. The out-migrant workers from Kerala had high educational attainments compared to other migration streams in the country and as a result they had very high representation in the clerical and related occupations.

The economic and social significance of migration to and from a State depends on the volume and characteristics of these streams and the conditions in the State affected by the movements. Kerala is usually described as a problem State of India. Its per capita income is lower than that of the country as a whole. The ratio of unemployed to the total population is the highest in Kerala among all the States in India. These problems—poverty and unemployment—are both related to the rapid population growth in the State. The rate of population growth in Kerala has been quite high since 1931. In the last decade the average annual growth rate was about 2.20 per cent which is more than the all-India value by 0.25 percentage points. If the State had not lost population through migration, the growth rate would have been higher: about 2.4 per cent. Therefore, the migration pattern of Kerala in recent years has been beneficial to the State in the sense that it tended to reduce the pressure of population on the resources of the State—resources such as food, schools, hospitals, employment opportunities, etc. The easening of the pressure on employment is of particular significance because of the acute nature of that problem in the State and the fact that the migrants from the State are concentrated in the young adult ages where the problem of unemployment is most severe. As the Bombay data show a very high proportion (33 per cent of working males and 43 per cent of females in Bombay) of the migrants from the State are matriculates and they are employed mostly in white-collar occupation such as clerks, typists, stenographers, etc. Nearly 38 per cent of Kerala-born working women in Bombay were employed in "professional technical and related occupations"—as school teachers and nurses. In Kerala there seems to be no dearth of qualified persons who can fill up positions as clerks, typists, stenographers, teachers and nurses. If these

migrants had not moved out, they would have most probably joined the already overcrowded group of job seekers in the State.

The in-migrants to the State appear to differ from the out-migrants not only in the age-sex distribution but also in their occupational and industrial characteristics. The in-migrants include the children of former out-migrants from the State, "marriage migrants" and others who have moved in for economic reasons. The hospitality of the former Maharajas of the State was an important factor for the in-migration of a number of Madras-born persons. Those who came on this account were employed mainly in services. But this movement came to an end by 1951 and even before that date, they were out-numbered by Madras-born plantation workers in Kerala. Nearly 50 per cent of the in-migrants in 1951 had their means of livelihood "production other than cultivation" which includes plantation labour. Therefore as with out-migration from the State, in-migration to the State took place as a result of gaps in the needed skills in the State, and the availability of these skills in nearby States. From the national point of view therefore migration to and from Kerala has resulted in a more efficient utilization of human resources in the country—the better educated Kerala youth, whose skills are not in great demand in their birthplace moving out to occupy positions such as clerks, typists, teachers, nurses, government executives in place where these skills are in short supply, and the less educated but skilled plantation workers moving into the State to fill up vacancies in this industry.

The out-migration of "excess" population not only helps to bring about a better balance between employment opportunities and employment seekers in the State and a more efficient utilization of skills available in the country, it also enables the dependents of the migrants who live in the State to achieve a higher standard of living. Most of the malayalees view migration as just a means of earning a higher income and they want to achieve this with the minimum of breaks with the "native land" and its culture.

As evident from the positive net migration at older ages the malayalees tend to return home after years of service outside the State. This is because the Kerala migrants very rarely sever their connections with the State of birth. Very often they migrate alone leaving their dependents—father, mother, brother, sister, wife and children—back "home" and send a substantial portion of their income earned outside the State for the maintenance of their dependents in Kerala.

Excess of out-migration over in-migration, however, does not seem to have lessened the pressure on the educational facilities in the State. On the contrary, the State seems to have gained population in school-going ages. It appears that migrants from the State, and perhaps even others too, send back their wards for education in the State. The superior educational facilities and|or the language and other barriers against the education of malayalee children in other States may be the factors responsible for this tendency.

The short-term advantages of out-migration from the State should however be balanced against its long-term disadvantages. If the State is continuously drained of the more educated and more skilled of its human resources, this loss may have its repercussions on the future economic trends in the State. The possible effect of such sustained loss may be inferred indirectly by comparing the economic trends in the different regions of the State. Compared with the other districts in the State, those in Malabar area have a lower density of population, a lower rate of population growth, and probably a higher rate of net out-migration. At the same time, these districts are the less developed part of Kerala, with the highest rate of unemployment and under-employment. Long-term solution to the population problems in the State, therefore, does not lie in the encouragement of a large volume of outmigration from the State. The money which the out-migrants send back to the State for the maintenance of their dependents, and that which they bring with them when they return migrate, are no compensation for the expenditure involved in the

education and training of the migrants and their maintenance when they come back after their sojourn. Kerala leads all other States in the country in the proportion of literates and in general education as a whole, but facilities for general education are not matched by facilities for providing technical skills. The State's position is particularly weak in respect of the training of craftsmen for industries. The number of technical schools is rather small in the State in relation to the total population, and in spite of the high level of literacy, the percentage of population attending technical institutions is less in Kerala than in India as a whole. The situation in regard to the industrial structure in the State is also far from satisfactory. Although the proportion of working force employed in industrial sector in Kerala is more than twice that in India as a whole, majority of these workers are engaged in low-productivity industries, such as coir manufacturing, cashewnut processing, etc. As a result, the industries in Kerala do not create any sizeable reinvestible surplus. It is, therefore, more meaningful to think of solutions to population problems in Kerala in terms of (i) reorganising its industrial structure by giving priority to high-productivity engineering industries, (ii) developing a body of local enterpreneurs who can initiate such industries, and (iii) reorganising its educational system, giving greater importance to technical education, and to the training of craftsmen who can man these engineering industries.

6. *SOME ASPECTS OF MIGRATION IN KERALA

By

V. Subramania Swamy,
Office of the Registrar General

SECTION—I

This section deals with the study of migration in and out of Kerala with other States of India. Of a total population of 16903715 persons, the total immigrants to the State accounts for 259705 persons. This when converted to percentage works out to be 1.38. The percentages for the two sexes, males and females, are respectively 1.47 and 1.29. The rural and urban population of the State are respectively 14,349,574 and 2,554,141 persons. The proportion of immigrants into rural areas to rural population for the two sexes are 1.25 for males and 1.15 for females. The corresponding proportion to urban population for those immigrants who have come to stay in urban parts of the State for males and females are respectively 2.66 and 2.13. Apparently this suggests that migration to urban areas of the State from other States seems to be more as compared to migration to rural areas. But a little reflection points to the fact that rural population is several fold larger in magnitude than urban population. Consequently the ratio for urban is more than that of rural. Taking total immigrants from other States as 100, the distribution to rural and urban are respectively 74 and 26. It is thus obvious that migration to rural areas is far greater than that of migration to urban areas from other States. The total emigration to other States as recorded in 1961 Census is 623,255 of which the contribution of rural areas is 366,173. This accounts for about 59% to total emigration to other States. It is observed that emigration far exceeds the immigration for both sexes. The following table

*The views expressed in this paper are that of the author alone.

Note—'Other States 'include Union Territories also.

gives the percentage distribution of immigrants from other States to total population of Kerala by rural and urban and by sex.

	Total	*Males*	*Females*
Total	1.38	1.47	1.29
Rural	1.20	1.25	1.15
Urban	2.40	2.66	2.13

Kerala has primarily an agricultural economy. About 85% of her people live in rural areas of the State. The two important industries are coir and cashewnut. These industries do employ a large number of workers and run unmechanised. The State does not possess any mineral deposit, of sizeable quantity except the sand beach which contains ilmenite. The important public undertakings aided by Central Government are Fertilisers and Chemicals, Travancore Limited, Travancore-Cochin Chemicals Limited., Indian Aluminium Company and Aluminium Industries Limited. It is no wonder that immigration to this State is small.

It has been pointed out that emigration exceeds immigration. The high rate of growth of population together with high density makes the situation worse. The pressure of population on agriculture is also very high. This State is faced with the chronic problem of unemployment. All these act as prime factors in making people migrate to other States.

Another noteworthy feature of both immigrants and emigrants is that these are mainly connected with adjacent States of the Southern Region namely Andhra Pradesh, Madras and Mysore. The following table illustrates the point mentioned above.

		Persons	*Males*	*Females*
% of immigrants from adjacent State to total immigrants (Andhra Pradesh, Madras, Mysore)	Total	92.38	90.97	93.94
	Rural	96.18	96.39	95.96
	Urban	81.69	76.90	87.73
Madras State	Total	82.38	82.22	82.56
	Rural	87.39	88.96	85.72
	Urban	68.27	64.70	72.78
% of emigrants (from rural and urban areas of Kerala State) to total emigrants. (Andhra Pradesh, Madras, Mysore)	Total	70.38	66.97	76.66
	Rural	72.69	69.01	79.93
	Urban	67.13	63.97	72.45
Madras State	Total	44.37	40.15	52.10
	Rural	43.16	39.29	50.77
	Urban	46.15	41.58	53.86

This phenomenon of high degree of migration in the adjacent States specially Madras may be due to nearness and similarity of customs and traditions prevailing in the Southern States. As distance increases, these factors assume heterogeneous character and stand in the way of mobility of population. The proportion of immigration or emigration in the adjacent States is greater to rural areas as compared to urban areas. The proportion of emigration of females in the adjacent States to total female is relatively more than the corresponding proportion of male emigration. This shows that when females emigrate, they go to shorter distances compared to males.

It is interesting to note that for migrants from adjoining States to Kerala either to rural areas or urban areas of the State, the sex ratio is nearly equal. This seems to suggest that social customs like marriages etc. may affect the pattern of migration in the adjoining States. The pattern of emigration to other States of India as seen from the sex-ratio table of emigrants points to the fact that emigration is marked by a preponderance of males.

The distribution of total immigrants from other States reveals that district Kottayam has the highest male immigration to rural areas of the district. The districts of Ernakulam and Trivandrum have a large share of male immigration to urban areas from other States. These two districts have urban characteristics in that the former is close to the port of Cochin where commercial activities are greater and the latter one is the Capital of the State where service sector predominates. The pattern of female immigration to rural and urban areas from other States is in general similar to that of male immigration. Perhaps the plantation areas of Kottayam in rural parts attract a larger share of immigration from other States.

The above facts are corroborated from table 4 which gives the percentage immigrants from other States to district population. In urban areas of Quilon and Palghat, the proportion of immigrants

from other States is relatively high. The immigrants to these districts may be on account of economic reasons. For example the district of Quilon attaracts many persons in Cashewnut industry. The pattern of female immigration from other States is similar to male immigrants. It has been pointed out earlier that though immigration to urban areas from other States as a percentage to the district population appears to be more than the corresponding immigration to rural areas, this is due to the fact that the denominator in the ratio for rural population is far greater than urban population.

Table 5 reveals that a major proportion of immigrants from other States migrate to rural areas of the districts of Cannanore, Palghat, Kozhikode, Trichur, Kottayam and Quilon. A fairly sizeable amount of immigration from other States takes place to urban areas of the districts of Ernakulam and Trivandrum. In rural areas, the rubber plantation in Kottayam district may be attracting a large part of the immigrants from other States to this district.

The percentage distribution of immigrants from other States in rural areas to rural areas of Kerala indicates that a large proportion of migrants coming from rural areas of other States migrate to rural areas of Kerala excepting the districts of Ernakulam, Alleppey and Trivandrum. It is found that female migration to rural areas of other States is more than the corresponding male migrants in few districts. This shows that female mobility from rural to rural is more than males. Another interesting feature of rural to rural immigration from other States is that migrants move to sparsely populated districts where they start new settlement. The high proportion of rural to rural migration in the districts of Palghat, Cannanore and Kottayam may be further substantiated by the fact that Kottayam leads in Plantation Crops, Palghat accounts for a major volume of production of Cotton and Grountnut in the State, Cannanore accounts for a major share of the total areas under tobacco in the whole of Kerala.

The distribution of immigrants from rural areas of other States of India to rural areas of Kerala

State by duration of residence indicates that about 60% of total immigration has taken place during 1951-61 for males. Roughly one-fourth of the total immigrants belong to the duration group 1-5 years. The proportion of male immigrants in the duration group 1-10 years is slightly more than that of female immigrants from rural areas of other States to rural areas of Kerala State. It is found that male immigration from rural areas of other States to urban areas of Kerala State having a stay of less than one year is relatively more than the male immigration from rural areas of other States to rural areas of Kerala. This may be due to larger volume of immigration to urban areas for employment in the duration group 0-1. It is also observed that the volume of female immigration from other States to Kerala is comparatively less when related to such male immigrants. The following table summarises the conclusion drawn above.

Born in	*Enumerated in*	*Total*	*Duration of Residence*			
			Less than one year	1-5 *years*	6-10 *years*	11+ *years*
R	R	T—100	14.57	25.29	17.92	42.04
		M—100	16.62	25.28	17.82	40.28
		F—100	12.29	25.30	18.02	44.29
	U	T—100	21.44	30.40	15.36	32.80
		M—100	26.27	30.16	14.83	28.74
		F—100	14.94	30.72	16.09	38.25

Table 7 shows how the immigrant workers from rural areas of other States to rural areas of Kerala is distributed over the different industrial categories. In the district of Cannanore, most of the male immigrant workers from rural areas to rural parts of the district have their occupation as cultivators, in plantations, forestry, livestock, fishing and other allied activities and in service. The larger volume of immigrant workers to Trichur district is in the industrial category III—plantations, forestry, livestock, fishing etc. About 75% of the male immigrant workers from rural areas of other States in the rural

parts of Kottayam district are employed in plantations. The cashewnut industry in Quilon perhaps attracts migrants to this district. The proportion of male immigrant workers in rural areas of Palghat district in industrial category III is very high. The Western Ghats provide probably employment opportunities in forestry and other allied activities. In the case of female immigrant workers from rural areas of other States to rural areas of Kerala State, it is found that the districts of Kozhikode, Trichur, Ernakulam, Kottayam and Quilon have a larger proportion of female workers engaged in industry Category III. It is obvious from above that most of the migrants from rural parts of other States to rural areas of Kerala State have their avocation in primary sector. Kerala being primarily a rural economy, there is no industrial base and the movement of persons from the rural areas of other States to the rural areas of the State are directed towards agriculture.

Some interesting conclusions can be drawn for those immigrant workers from rural areas of other States to urban areas of Kerala State as seen from the occupational structure. It is found that a good proportion of male immigrant workers from rural areas of other States to urban areas of the districts of Kerala are engaged in Trade and Commerce, Transport and Communications and Service. The district of Ernakulam and Trivandrum predominate in Service Category. The position as regards female immigrant workers from rural areas of other States to urban areas of Kerala State indicates that a large proportion of female workers are engaged in Service Category. Slightly over one-fifth of female immigrant workers are engaged in household industry in the districts of Palghat, Kottayam and Alleppey. It is thus observed that the movement of migrant workers from rural areas of other States to rural areas of Kerala State is primarily towards agriculture while from rural areas of other States to urban areas of Kerala State, the movement of males is in Trade and Commerce, Transport and Communications and Service and for females the predominant industrial category is service.

SECTION—II

Inter-District Immigration

This section deals with the inter-district immigration within Kerala State. Taking the total of male immigrants as 100 separately for rural and urban, it can be seen from table 11 that the maximum inter-district male immigration into rural areas of the State comes to the district of Kozhikode followed by the district of Cannanore and Kottayam, while in urban parts of the State the highest proportion of male immigrants surrounds the district of Ernakulam followed by the district of Trivandrum. In the districts of Ernakulam and Trivandrum, the high proportion of male immigrants to urban areas of the districts seems to be due to the availability of employment opportunities in non-agricultural pursuits. The plantation areas of Kottayam and the agriculturally prosperous (in cash crops) districts of Kozhikode and Cannanore have attracted male immigrants to rural areas of these districts. The pattern of migration to rural and urban areas within the State in the case of females remains same except for Alleppey district as for male immigrants. The highest proportion of female immigrants to rural areas of the State is recorded for Kozhikode district while migration to urban areas is maximum for Ernakulam district. The sex-ratio of inter-district immigrants by rural and urban reveals interesting conclusions. The table below gives the sex-ratio of inter-district immigrants.

[illegible]	*District*	*Sex ratio*	
		Rural	*Urban*
	Cannanore	843	641
	Trichur	1,194	1,032
	Ernakulam	1,296	831
	Kottayam	1,022	1,005
	Alleppey	2,200	1,292
	Quilon	1,079	883
	Trivandrum	908	682
	Kozhikode	924	830
	Palghat	1,464	958

In rural tracts of the State, sex-ratio is unusually high in districts of Trichur, Ernakulam, Kottayam, Alleppey, Quilon and Palghat, while in urban areas, females predominate in districts of Trichur, Kottayam and Alleppey. It is a common custom even today in India that bride is chosen from neighbouring villages or that married females go back to their parents' home for confinement. Perhaps the preponderance of female immigrants into rural areas of the State may be attributed to social customs like marriages etc. However, it may be admitted that female labour is also prevalent in the State in rural areas especially in agricultural occupations. In urban areas, industries like coir and rubber employ female labour.

Table 12 indicates the proportionate contribution of total inter-district immigrants to rural and urban. It is observed that a major proportion of total inter district immigrants within the State for each district migrate to rural parts of the districts excepting the districts of Ernakulam and Trivandrum. These two districts occupy key positions in that the former one has a port near by and the latter is the Capital of the State where employment opportunities are many in non-agricultural occupations. It may be further emphasised that high proportion of inter district immigrants to rural areas of the district of Kottayam may be the result of greater demand for labour especially in plantation areas.

If we consider the total inter district immigrants within the State expressed as a percentage to the total district population separately for rural and urban, it is observed that the percentage of immigrants in urban areas is in general relatively more than the corresponding figures for rural. The reason is not far to seek. The high proportion of rural population of the district as compared to the corresponding urban population makes all this difference. Eventhough the absolute value of immigration to rural areas of the districts is greater in magnitude, the high figure of rural population for the district brings down the ratio considerably.

Table 13 indicates the percentage of inter district immigrants to total district population: rural or urban within the State into rural and urban areas separately and by sex. In the case of male immigrants to rural areas, the highest proportion is recorded in Cannanore district followed by the district of Kottayam. These two districts attract males to rural areas of the districts. Districts having more than 10% of male immigrants to total district population in urban areas are Ernakulam, Kottayam and Quilon. The coir industries in Ernakulam, rubber plantation in Kottayam and the Cashewnut industry in Quilon do attract migrants to urban areas of these districts.

Coming to female immigrants to rural areas, the highest proportion is recorded for Kottayam district followed by Cannanore district. The districts of Ernakulam, Alleppey, Quilon and Kozhikode districts do register a percentage of over 5 to total female immigrants in rural areas. The comparative high proportions may be due to demand for female labour in agricultural sector. Even in the urban areas of the districts of Ernakulam and Kottayam, the percentage of female immigrants to urban areas of these districts is very high. Industries like coir and cashewnut do utilise female labour considerably.

It will be worthwhile to consider inter-district immigration from rural to rural and urban areas separately within the State by sex. More than 75% of male immigration from rural to rural areas within the State occurs in all districts except Ernakulam, Alleppey and Trivandrum. The last three districts mentioned above have high proportion of male immigrants from rural to urban parts within the State. The position as regards female immigrants presents interesting pattern. The volume of rural to rural female migration within the State is comparatively more than male migration while the reverse case is found in rural to urban migration. The marriage custom of taking wives from neighbouring villages and the practice of sending back females to their parents' home for delivery and the opportunity of employment in agricultural sector—all these factors

encourage female migration within rural parts of the State. In urban areas of the districts of Ernakulam and Trivandrum, the female migrants from rural areas within the State, share a high proportion. Inter district migration from rural areas to rural or urban areas within the district is chiefly confined to rural areas within the State excepting the districts of Ernakulam and Trivandrum for both sexes. The two important industries, in Kerala are coir and cashewnut. Coir industry is organised as a cottage industry and cashewnut though organised is unmechanised. There is no sizeable mineral deposit except the sand beach. Agriculturally, Kerala has high value yielding cash crops like coconut, pepper, rubber, arecanut, tea, cashewnut, cardamom and coffee; the absence of organised industries and the level of unemployment in urban areas, may be factors for the movement of population from rural to rural areas within the State.

Table 15 presents the percentage distribution of inter-district immigrants from urban to rural and urban areas separately within the State. The districts can be arranged as follows in the case of male immigrants.

	Range	*To urban areas*	*Range*	*To rural areas*
From Urban	50-60	Cannanore Alleppey Kozhikode Palghat	50-60 60-70	Trichur Kottayam Quilon
	70-80	Ernakulam Trivandrum		

In the districts of Ernakulam and Trivandrum, the movement of males from urban to urban areas within the districts is keenly felt. It may be that there is movement from small towns to bigger towns and cities. In the districts of Trichur, Kottayam and Quilon, the general pattern of movement of males is from urban areas to rural parts within the State. In the case of male immigrants from urban to rural areas within the State, the districts which register a major proportion of such immigrants are Cannanore, Trichur, Kottayam, Quilon and Palghat. The following table rearranges the districts according to the volume of immigrations of females.

DURATION OF RESIDENCE (MALES)

Range	*Less than one year*		*Less than 10 years*		*More than 10 years*
				20-30	Cannanore Trichur Trivandrum Koahikode Palghat
10-20	All districts	50-60	Quilon		
30-40	Quilon	60-70	Ernakulam		
40-50	Ernakulam Alleppey Trivandrum		Kottayam Alleppey	30-40	Ernakulam Kottayam Alleppey
				40-50	
		70-80	Cannanore Trichur Trivandrum Kozhikode Palghat		Quilon
50-60	Cannanore Trichur Kottayam Kozhikode Palghat				

It is observed from above that the district Quilon has the highest percentage of male immigrants who have come to this district prior to 1951. The districts of old Malabar, Trichur and Trivandrum record 20-30 per cent of male immigrants, who have their period of stay exceeding 10 years. These districts have attracted migrants during 1951-61 more than any other district. It is also observed that less than 30 per cent of the male immigrants are permanently settled in these districts.

A similar table can also be prepared for female immigrants, arranging the districts according to duration of residence.

	Range	*To rural*		*To urban*
From Urban	50-60	Cannanore Trichur Palghat	50-60	Alleppey Kozhikode
	60-70	Kottayam Quilon	60-70	Ernakulam Trivandrum

The pattern of female immigration from urban to urban and rural areas separately is relatively similar to that of male immigration. It appears that in the case of urban to urban migration, the mobility among males and females is equally predominant especially in the districts of Alleppey, Kozhikode, Ernakulam and Trivandrum.

It will be interesting to analyse immigrants from rural to rural areas within the State by duration of residence. There are several kinds of migration and it will be useful to explain each of them.

Casual migrations.

The practice of selecting bride from outside the villages and of women going to their parents' home are classed under casual migration.

Temporary migration.

This occurs when there is great demand for labour in any place due to carrying out of projects, construction of new roads or railways, business visits etc.

Periodic migration is one which takes place annually in different parts at harvest time etc. Agricultural labourers employed in removing crops do stretch out over large areas.

Semi-permanent migration.

This consists of cases where the inhabitants of one place earn their livelihood in another but retain connection with their old homes where they frequently leave their families.

Permanent migration.

Migration is termed permanent where the inhabitants settle in another place permanently.

Table 16 shows that between 10-20% of male inter district immigrants from rural to rural areas within the State reside in the respective districts for less than one year. The concentration of male immigrants is mostly found in the duration groups 1-5 and more than ten years. In the duration group less than one year the highest proportion of immigrants is recorded for Trichur district, closely followed by Trivandrum district. About 45% of male immigrants in Cannanore district from rural to rural areas within the State do reside for not more than 1-5 years in Cannanore district.

The distrirts can be arranged according to duration of residence as given below:

DURATION OF RESIDENCE

	Less than one year		*Less than 5 years*		*Less than 10 years*		*More than 10 years*
0-10	Trichur	0-10					
	Ernakulam	10-20					
	Kottayam	20-30	Alleppey			20-30	Cannanore
	Alleppey						Trivandrum
	Quilon	30-40	Trichur			30-40	Kottayam
	Kozhikode		Ernakulam				Kozhikode
	Palghat		Quilon				
10-20	Cannanore		Palghat	40-50	Alleppey	40-50	Trichur
	Trivandrum	40-50	Kottayam				Ernakulam
			Trivandrum	50-60	Trichur		Quilon
	Kozhikode		Ernakulam		Ernakulam		Palghat
		50-60	Cannanore		Quilon	50-60	Alleppey
					Palghat		
				60-70	Kozhikode		
					Kottayam		
				70-80	Cannanore		
					Trivandrum		

It is found that female immigration during the decade 1951-61 is mostly to districts of Cannanore and Trivandrum. Female immigrants residing prior to 1951 are mostly found in Alleppey district. This district has the highest percentage of permanent female immigrants. As compared to male immigrants, proportion of female immigrants having a stay of less than a year is comparatively less. The relative percentage of female immigrants who are residing prior to 1951 is more in all districts excepting Kottayam, as compared to male immigrants.

Table 18 reveals in general about one-fourth of the male immigrants from rural to urban areas within the State stay in the urban areas of the districts for less than a year. As compared to migration from rural to rural areas for males within the State, relatively speaking, there is greater volume of migrants from rural to urban areas in the duration groups of less than a year. The reason seems to be that mobility from rural to urban areas within the State may be on account of economic pressure. The districts can be arranged according to duration of residence as given below:

DURATION OF RESIDENCE (MALES)

Range	*Less than one year*	*Less than 10 years*		*More than 10 years*
10-20	Alleppey		20-30	Cannanore
20-30	The rest of the districts			Trichur
				Ernakulam
				Kottayam
				Quilon
				Palghat
			30-40	Trivandrum
				Kozhikode
			40-50	Alleppey
		50-60	Alleppey	
		60-70	Trivandrum	
			Kozhikode	
		70-80	Cannanore	
			Trichur	
			Ernakulam	
			Kottayam	
			Quilon	
			Palghat	

In 1961, between 40-50% of male immigrants from rural to urban parts of the State are residing permanently in Alleppey district having a stay of more than ten years. There is thus a small volume

of short term male migration in urban parts of this district, as compared to other districts.

The corresponding percentages of female inter-district immigrants from rural to urban areas within the State in the duration group of less than a year are relatively small. But in almost all districts, the percentage of female immigrants from rural to urban areas within the State prior to 1951 is more than the corresponding figures for male immigrants. There is a tendency among females to restrict their movements from rural to urban areas within the State. The proportions of immigrants from rural to urban within the State in the districts do not seem to be different in the duration group 1-10 years for both sexes. The districts can be arranged in the following way by duration of residence for females.

Range	*Less than one year*		*Less than 10 years*		*More than 10 years*
10-20	Trihcur	50-60	Trichur	20-30	Trivandrum
	Ernakulam		Alleppey		
	Kottayam		Kozhikode	30-40	Cannanore
	Alleppey				Ernakulam
	Quilon	60-70	Cannanore		Kottayam
	Trivandrum		Ernakulam		Quilon
	Kozhikode		Kottayam		Palghat
	Palghat		Quilon	40-50	Trichur
			Palghat		Alleppey
20-30	Cannanore	70-80	Trivandrum		Kozhikode

It is seen from above that only a small proportion of inter-district female migrants from rural to urban areas within the State to Trivandrum district have remained here for more than 10 years. All districts of Kerala excepting Cannanore have relatively very few female migrants from rural to urban areas within the State residing for less than a year. It appears that inter-district female immigration from rural area to urban areas having a stay of less than a year is comparatively small in all districts except Cannanore.

It can be inferred that migration of females is relatively small as compared to male migration from rural area to urban areas within the State especially during 1951-61 assuming that there is no further migration during the period.

Table 19 presents the percentage distribution of immigrant workers from rural to rural areas within the State by livelihood classes. About one-half of the male immigrant workers from rural to rural areas within the State make their livelihood as cultivators in Cannanore district. Male immigrant workers to Trichur and Ernakulam districts mostly take the profession of cultivators and in service. There is a high proportion of male immigrant workers attached to livestock, forestry, fishing, hunting, plantation and other allied activities. This high proportion of male immigrant workers in this districts is due to the demand of labour in plantation areas. Male immigrant workers in 'Service' are also significant in this district. In the rest of the districts, the principal occupation of male immigrant workers are centred round cultivation and service. The following table gives the percentage distribution of male immigrant workers from rural to rural areas within the district by sectors and by sex.

(*Males*)

	District	*Primary*	*Secondary*	*Tertiary*
1.	Cannanore	71.47	4.39	24.14
2.	Ernakulam	46.68	14.48	38.94
3.	Trichur	49.66	10.38	39.96
4.	Kottayam	52.01	11.22	36.77
5.	Alleppey	47.04	12.92	40.04
6.	Quilon	59.52	11.33	29.15
7.	Trivandrum	54.50	8.00	37.50
8.	Kozhikode	66.72	6.21	27.07
9.	Palghat	38.82	10.11	51.07

It is observed from above that a majority of male immigrant workers in almost all districts excepting Palghat, Ernakulam and Alleppey from rural to rural areas within the State are predominantly engaged in primary sector. The proportion of male immigrant workers in secondary sector is too low in each district.

Table 20 gives the percentage distribution of female immigrant workers from rural to rural areas

within the State by livelihood categories. In Cannanore district female immigrant workers as cultivators are predominant. In other districts except Alleppey and Kottayam, the important livelihood categories are cultivators, agricultural labourers and service. Female immigrant workers from rural to rural areas within the State are in almost all districts fairly engaged as Agricultural labourers. In Kottayam district a fairly large proportion of female immigrant workers are engaged in forestry, livestock, plantation, fishing, hunting and other activities. There seems to be demand for female labour in plantation areas in this district. A good proportion of female immigrant workers in Alleppey district are found to have engaged in Household industry. The following Table gives the percentage of female immigrant workers classified by sex.

	District	*Primary*	*Secondary*	*Tertiary*
1.	Cannanore	78.27	4.70	17.03
2.	Kozhikode	70.55	4.97	24.58
3.	Palghat	53.25	12.13	34.62
4.	Trichur	55.70	17.06	27.24
5.	Ernakulam	46.33	20.53	33.14
6.	Kottayam	60.91	14.92	24.17
7.	Alleppey	40.67	37.57	21.86
8.	Quilon	51.69	14.55	33.76
9.	Trivandrum	36.50	18.52	44.98

It is found from above that most of the female immigrant workers are engaged in primary sector excepting the districts of Ernakulam, Alleppey and Trivandrum. The least proportion of female immigrant workers is in Trivandrum district while the tertiary sector in this district share a major proportion of female immigrant workers.

Male immigration from rural to urban areas within the State have their means of livelihood mostly from service in all districts. In Quilon district 20.45% of male immigrant workers are engaged in manufacturing. Perhaps this is due to the

Cashewnut industry which abounds in plenty. The percentage distribution of male immigrant workers into sectors is shown below:

	District	*Primary*	*Secondary*	*Tertiary*
1.	Cannanore	5.92	19.74	74.34
2.	Trichur	6.95	13-73	79.32
3.	Ernakulam	2.37	13.81	83.82
5.	Kottayam	7.03	15.70	77.27
4.	Alleppey	7.07	20.56	72.37
6.	Quilon	4.04	21.58	74.38
7.	Trivandrum	1.73	7.84	90.43
8.	Kozhikode	3.70	20.87	75.43
9.	Palghat	2.70	16.60	80.70

It is observed from above that a majority of male immigrant workers from rural to urban areas within the State have their vocation in tertiary sector. Trivandrum being the capital of the State, slightly over 90% of the male immigrant workers from rural to urban areas within the State are in tertiary sector in this district. The districts of Quilon, Trivandrum and Kozhikode have slightly over one fifth of the total immigrant male workers in secondary sector.

The percentage distribution of female immigrant workers from rural to urban areas within the State is given in table 22. It is observed that a majority of female immigrant workers in each district are engaged in service. In Alleppey district, 24.6% of female immigrant workers have their avocation in household industry. There is high proportion of female immigrant workers in manufacturing in Quilon district. Perhaps women labour is utilised in Cashewnut industries in Quilon. The following table furnishes the percentage distribution of female immigrant workers by Sectors.

	District	*Primary*	*Secondary*	*Tertiary*
1.	Cannanore	1.32	12.01	86.67
2.	Kozhikode	1.97	14.51	83.52
3.	Palghat	9.12	10.71	80.17
4.	Trichur	13.40	10.61	75.99
5.	Ernakulam	6.29	5.64	88.07
6.	Kottayam	9.01	15.64	75.35
7.	Alleppey	13.31	32.06	54.63
8.	Quilon	0.67	25.68	73.65
9.	Trivandrum	1.15	3.79	95.06

Table 1. Immigration from other States to Rural and Urban areas of Kerala State

		Persons	*Males*	*Females*	*Sex ratio*
Migration from other States and Territories	R	172,220	88,729	83,491	941
	U	61,196	34,148	27,048	792
Migrants from other Countries	R	19,857	9,157	10,700	..
	U	6,432	4,278	2,154	..
Total	R	192,077	97,886	94,191	962
	U	67,628	38,426	29,202	760
(Migrants from adjacent States A. P., Madras and Mysore)	R	165,646	85,530	80,116	937
	U	49,989	26,260	23,729	904
Migrants from other States and Territories excluding (A. P., Madras and Mysore)	R	6,574	3,199	3,375	1,055
	U	11,207	7,888	3,319	421

Table 2. Emigration from Rural and Urban Areas of Kerala to other States of India

		Persons	*Males*	*Females*	*Ses*
Migration to States and Territories	Rural	366,173	242,685	123,488	509
	Urban	256,199	160,840	95,359	593
Migrants to adjacent States (Andhra Pradesh Mysore and Madras)	Rural	266,183	167,476	98,707	589
	Urban	171,981	102,889	69,092	672
Migrants to States and Territories other than Andhra Pradesh, Madras and Mysore	Rural	99,990	75,209	24,781	329
	Urbzn	84,218	57,951	26,267	453

Table 3. District-wise percentage distribution of Immigrants from other States by Rural/Urban areas

Sl.Nol	*Name of District*	*Males*			*Females*		
		Totall	*Rural*	*Urban*	*Total*	*Rural*	*Urban*
1	Cannanore	7.16	6.71	8.32	9.91	9.49	11.20
2	Trichur	2.85	2.83	2.88	2.72	2.54	3.30
3	Ernakulam	7.34	1.70	21.99	4.87	1.36	15.71
4	Kottayam	39.80	53.74	3.59	37.51	48.86	2.47
5	Alleppey	2.27	1.20	5.05	1.87	0.98	4.63
6	Quilon	6.89	6.70	7.39	6.05	5.74	6.98
7	Trivandrum	12.74	6.16	29.82	15.67	9.03	36.16
8	Kozhikode	7.64	5.34	13.59	6.18	5.34	8.76
9	Palghat	13.33	15.63	7.37	15.23	16.66	10.79
	Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 4. Immigrants from other Ststes of India to Rural/Urban areas of Districts of Kerala expressed as percentage to respective population of the District

Sl.No.	Name of District	Males			Females		
		Total	Rural	Urban	Total	Rural	Urban
1	Cannanore	1.01	0.82	1.90	1.21	1.05	2.01
2	Trichur	0.45	0.36	1.09	0.35	0.28	0.93
3	Ernakulam	0.97	0.21	3.69	0.58	0.15	2.22
4	Kottayam	5.54	5.97	1.45	4.88	5.31	0.82
5	Alleppey	0.31	0.14	1.12	0.24	0.11	0.80
6	Quilon	0.87	0.66	3.42	0.69	0.53	2.68
7	Trivandrum	1.80	0.85	4.51	1.98	1.15	4.39
8	Kozhikode	0.72	0.44	2.13	0.52	0.41	1.10
9	Palghat	1.92	1.81	2.98	1.82	1.66	3.34
	KERALA	1.47	1.25	2.66	1.29	1.15	2.13

Table 5. Percentage distribution of Immigrants from other States by Rural and Urban

Sl.No.	State/District	Total	Rural	Urban
	Kerala	100.00	73.78	26.22
1	Cannanore	100.00	70.27	29.73
2	Kozhikode	100.00	56.75	43.25
3	Palghat	100.00	83.64	16.36
4	Trichur	100.00	71.15	28.85
5	Ernakulam	100.00	18.31	81.69
6	Kottayam	100.00	97.91	2.09
7	Alleppey	100.00	38.75	61.25
8	Quilon	100.00	70.87	29.13
9	Trivandrum	100.00	39.44	60.56

Table 6. Percentage distribution of Imigrants from other States with birth places as Rural areas to Urban and Rural areas in each district of Kerala State along with Rural Density

Sl.No.	Name of Districts	Persons			Males			Females			Density Rural 1961
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	
1	Cannanore	100	85.57	14.43	100	84.00	16.00	100	86.74	13.26	700
2	Kozhikode	100	74.78	25.22	100	68.73	31.27	100	82.44	17.56	871
3	Palghat	100	91.14	8.86	100	91.89	8.11	100	90.37	9.63	826
4	Trichur	100	81.98	18.02	100	82.27	17.73	100	81.60	18.40	1316
5	Ernakulam	100	21.78	78.22	100	18.67	81.22	100	28.35	71.65	1185
6	Kottayam	100	98.80	1.20	100	98.43	1.57	100	99.24	0.76	648
7	Alleppey	100	36.61	63.39	100	38.08	61.92	100	34.15	65.85	2291
8	Quilon	100	77.30	22.70	100	76.08	23.92	100	78.83	21.17	992
9	Trivandrum	100	47.38	52.62	100	41.59	58.41	100	52.43	47.57	1670
	Kerala State	100	83.26	16.74	100	81.67	18.33	100	85.01	14.99	985

Table 7. Percentage Distribution of Male Immigrant Workers from Rural areas of other States to Rural areas of Kerala State by Industrial Categories in each district

Sl. No.	Name of Districts	Male Workers									
		Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100	24.79	8.30	24.29	5.70	3.61	2.17	4.26	1.12	25.77
2	Kozhikode	100	5.29	3.85	66.15	0.64	4.91	1.66	2.64	0.87	14.00
3	Palghat	100	18.25	15.97	20.40	1.66	1.52	26.78	3.47	1.52	10.45
4	Trichur	100	1.06	0.53	52.07	2.12	7.93	10.05	2.82	1.76	21.68
5	Ernakulam	100	0.98	0.39	27.36	0.39	25.00	14.57	1.77	1.57	27.95
6	Kottayam	100	0.39	1.93	74.48	0.31	6.99	2.25	3.29	0.80	9.58
7	Alleppey	100	6.10	1.22	5.69	2.03	10.98	18.70	15.04	2.85	37.40
8	Quilon	100	1.81	2.09	58.26	0.86	9.62	3.64	4.81	2.64	16.27
9	Trivandrum	100	19.21	15.70	21.66	4.09	7.51	2.34	5.23	1.75	22.5

Table 8. Percentage Distribution of Female Immigrant workers from Rural areas of other States to Rural areas of Kerala by nine industrial categories in each district

Sl.No.	District	Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100.00	42.33	14.94	18.03	6.10	1.06	0.57	0.93	0.13	15.91
2	Kozhikode	100.00	2.57	3.32	86.62	0.48	0.54	0.21	0.11	...	6.15
3	Palghat	100.00	21.93	29.78	24.50	2.04	0.19	12.28	1.05	0.22	8.01
4	Trichur	100.00	0.65	0.33	82.25	6.84	1.47	4.56	0.16	0.16	3.58
5	Ernakulam	100.00	1.69	1.13	62.72	1.13	20.90	..	..	0.57	11.86
6	Kottayam	100.00	0.24	1.13	93.93	0.07	1.28	0.07	0.05	0.04	3.19
7	Alleppey	100.00	16.67	..	8.33	..	..	..	..	..	75.0
8	Quilon	100.00	0.62	0.58	90.31	0.62	1.83	..	0.34	0.08	5.62
9	Trivandrum	100.00	6.62	7.63	30.46	35.53	2.64	0.05	2.59	0.87	13.71

Table 9. Percentage Distribution of Male Immigrant Workers from Rural areas of other States to Urban areas of Kerala State by Industrial Categories in each district

Sl.No.	District	Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100	3.03	0.38	3.79	4.17	18.18	0.77	10.61	24.43	34.66
2	Kozhikode	100	0.16	..	0.64	2.00	5.92	1.68	15.83	50.44	23.34
3	Palghat	100	1.00	0.40	0.60	6.80	14.40	4.40	27.00	49.60	20.80
4	Trichur	100	..	..	0.96	0.48	13.46	2.89	32.69	13.94	35.58
5	Ernakulam	100	0.14	..	1.43	0.49	7.24	0.70	10.79	25.33	53.90
6	Kottayam	100	0.75	..	2.43	5.61	6.36	4.67	42.99	9.11	33.08
7	Alleppey	100	0.36	0.18	3.39	3.57	9.64	2.86	37.50	15.00	27.50
8	Quilon	100	..	0.09	2.52	0.81	14.99	0.45	29.89	15.53	35.73
9	Trivandrum	100	0.91	0.42	2.18	2.25	9.81	2.32	28.90	7.09	46.14

Table 10. Percentage Distribution of Female Immigrant Workers from Rural areas of other States to Urban areas of Kerala by nine industrial categories in each district

Sl.No.	District	Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100.00	19.88	3.11	3.11	6.83	21.12	0.62	4.35	2.48	38.50
2	Kozhikode	100.00	0.72	..	..	5.76	5.03	1.44	1.44	2.88	82.73
3	Palghat	100.00	1.96	5.23	..	22.22	1.96	3.92	4.58	1.31	58.82
4	Trichur	100.00	..	..	..	..	9.09	..	18.18	9.09	63.64
5	Ernakulam	100.00	..	..	1.14	4.55	9.09	..	12.50	1.14	71.58
6	Kottayam	100.00	..	..	..	26.92	..	..	3.85	..	69.23
7	Alleppey	100.00	..	..	..	27.78	..	..	5.56	..	66.66
8	Quilon	100.00	..	..	2.11	2.11	11.58	..	4.20	2.11	77.89
9	Trivandrum	100.00	1.31	..	0.33	3.43	2.94	0.16	7.52	1.31	83.00

Table 11. District-wise percentage distribution of Inter-district Immigrants within Kerala by Rural/Urban

Sl. No.	Name of district	Persons			Males			Females		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	Cannanore	14.39	16.43	7.15	16.17	18.69	8.18	12.68	14.37	5.98
2	Kozhikode	17.31	18.57	12.87	18.55	20.24	13.20	16.13	17.04	12.49
3	Palghat	5.33	5.24	5.64	4.69	4.46	5.41	5.94	5.95	5.90
4	Trichur	8.04	8.34	6.97	7.60	7.97	6.44	8.46	8.68	7.58
5	Ernakulam	12.71	9.84	22.98	12.46	8.98	23.49	12.96	10.61	22.27
6	Kottayam	15.79	17.18	10.85	15.98	17.81	10.16	15.60	16.60	11.63
7	Alleppey	9.24	8.50	11.87	6.57	5.57	9.72	11.81	11.17	14.32
8	Quilon	12.08	13.48	7.12	12.04	13.60	7.09	12.12	13.37	7.15
9	Trivandrum	5.11	2.43	14.62	5.94	2.67	16.31	4.32	2.21	12.69
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 12. Percentage Distribution of Immigrants from other districts by Rural and Urban

Sl.No.	State/District	Total	Rural	Urban
	Kerala	100.00	78.00	22.00
1	Cannanore	100.00	89.06	10.94
	Kozhikode	100.00	83.65	16.35
3	Palghat	100.00	76.72	23.28
4	Trichur	100.00	80.93	19.07
	Ernakulam	100.00	60.34	39.66
	Kottayam	100.00	84.88	15.12
7	Alleppey	100.00	71.74	28.26
8	Quilon	100.00	87.03	12.97
	Trivandrum	100.00	37.08	62.92

Table 13. Inter-District Immigrants to Rural/Urban areas of the Districts in Kerala expressed as percentage to Rural/Urban population of the Districts

Sl.No.	Name of District	Persons			Males			Females		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	Cannanore	7.27	7.79	4.72	8.14	8.63	5.78	6.44	6.99	3.67
2	Kozhikode	5.96	5.97	5.89	6.28	6.25	6.41	5.63	5.69	5.37
3	Palghat	2.69	2.29	6.50	2.42	1.95	6.75	2.95	2.61	6.25
4	Trichur	4.41	4.03	7.43	4.27	3.84	7.55	4.55	4.20	7.32
5	Ernakulam	6.15	4.72	11.48	5.89	4.13	12.19	6.42	5.29	10.73
6	Kottayam	8.20	7.69	12.98	7.97	7.47	12.74	8.44	7.93	13.24
7	Alleppet	4.59	3.98	7.57	3.24	2.52	6.65	5.91	5.39	8.48
8	Quilon	5.60	5.27	9.78	5.45	5.07	10.13	5.75	5.47	9.40
9	Trivandrum	2.64	1.32	6.45	3.01	1.39	7.62	2.27	1.24	5.28

Table 14. Percentage Distribution of Inter-District Immigrants to Rural/Urban areas in the State having birth place as rural areas

Sl. No.	Name of District	Persons			Males			Females		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	Cannanore	100	93.14	6.86	100	92.12	7.88	100	94.36	5.64
2	Kozhikode	100	88.67	11.33	100	87.86	12.14	100	89.56	10.44
3	Palghat	100	83.74	16.26	100	80.62	19.38	100	85.87	14.13
4	Trichur	100	84.98	15.02	100	83.69	16.31	100	86.08	13.92
5	Ernakulam	100	69.15	30.85	100	63.38	36.62	100	74.27	25.73
6	Kottayam	100	87.37	12.63	100	87.03	12.97	100	87.70	12.30
7	Alleppey	100	78.52	21.48	100	71.56	28.44	100	81.97	18.03
8	Quilon	100	90.81	9.19	100	89.62	10.38	100	91.92	8.08
9	Trivandrum	100	42.73	57.27	100	38.76	61.24	100	48.12	51.88
	Kerala State	100	83.72	16.28	100	81.81	18.19	100	85.52	14.48

Table 15. Percentage Distribution of Inter-District Immigrants to Rural /Urban areas in Kerala having birth place as Urban areas

Sl.No.	Name of District	Persons			Males			Females		
		Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1	Cannanore	100	45.58	51.42	100	47.34	52.66	100	50.21	49.79
2	Kozhikode	100	45.34	54.66	100	46.31	53.69	100	44.21	55.79
3	Palghat	100	51.27	48.73	100	48.87	51.13	100	53.86	46.14
4	Trichur	100	59.60	40.40	100	59.99	40.01	100	59.23	40.77
5	Ernakulam	100	28.98	71.02	100	26.84	73.16	100	31.24	68.76
6	Kottayam	100	67.59	32.41	100	69.40	30.60	100	65.74	34.26
7	Alleppey	100	47.35	52.65	100	43.82	56.18	100	49.76	50.24
8	Quilon	100	68.66	31.34	100	68.82	31.18	100	68.49	31.51
9	Trivandrum	100	23.98	76.02	100	23.10	76.90	100	25.07	74.93
	Kerala State	100	48.31	51.69	100	47.39	52.61	100	49.27	50.73

Table 16. Percentage Distribution of Inter-district Male Immigrants to rural areas of Districts in Kerala having rural areas as birth place by duration of residence

Sl.No.	Name of District	Total	Less than 1 year	1-5 years	6-10 years	11+ years
1	Cannanore	100	13.49	45.00	18.88	22.63
2	Palghat	100	18.51	36.58	18.44	26.47
3	Kozhikode	100	12.48	37.94	20.42	29.16
4	Trichur	100	18.25	31.97	19.84	29.94
5	Ernakulam	100	13.68	30.03	16.85	39.44
6	Kottayam	100	14.97	41.11	4.88	39.04
7	Alleppey	100	16.81	27.87	15.87	39.45
8	Quilon	100	10.27	29.32	18.98	41.43
9	Trivandrum	100	17.10	32.11	20.97	29.82

Table 17. Percentage Distribution of Inter-District Female Immigration to Rural areas of the District in Kerala having Rural areas as birth place by duration of residence

Sl.No.	Name of District	Total	Less than 1 year	1-5 years	6-10 years	11+ years
1	Cannanore	100	10.57	46.90	19.77	22.76
2	Kozhikode	100	8.59	37.28	23.22	30.91
3	Palghat	100	9.37	27.62	17.42	45.59
4	Trichur	100	8.48	27.85	20.86	42.81
5	Ernakulam	100	9.05	24.57	17.82	48.56
6	Kottayam	100	9.51	36.16	18.67	35.66
7	Alleppey	100	8.81	20.85	16.72	52.62
8	Quilon	100	8.00	27.06	18.53	46.41
9	Trivandrum	100	14.74	34.72	20.91	29.63

Table 18. Percentage distribution of Inter-district Immigrant to Urban areas of the district in Kerala having Rural areas as place of enumeration by duration of residence

Sl. No.	Name of District	Males					Females				
		Total	Less than 1 year	1-5 years	6-10 years	11+ years	Total	Less than year	1-5 years	6-10 years	11+ years
1	Cannanore	100	28.22	36.24	13.32	22.22	100	20.13	32.51	13.85	33.51
2	Kozhikode	100	20.84	30.98	12.12	36.06	100	14.81	29.17	14.14	41.58
3	Palghat	100	29.93	32.92	12.85	24.30	100	18.93	34.46	12.10	34.51
4	Trichur	100	21.98	37.42	12.16	28.44	100	13.26	29.19	14.62	42.93
5	Ernakulam	100	21.20	35.48	13.97	29.35	100	16.71	31.23	15.14	36.92
6	Kottayam	100	20.95	36.33	13.64	29.08	100	16.27	30.22	14.17	39.34
7	Alleppey	100	15.92	27.72	12.73	43.63	100	11.39	26.56	15.47	46.58
8	Quilon	100	20.06	37.59	12.92	29.43	100	18.05	34.43	14.15	33.37
9	Trivandrum	100	22.82	42.37	11.29	33.52	100	18.74	38.98	13.88	28.40

Table 19. Percentage Distribution of Inter-District Male Immigrants Workers to Rural areas of the Districts in Kerala having Rural areas as birth place by nine industrial categories

Sl. No.	Name of District	Male Migrant Workers									
		Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100	49.58	13.40	8.49	3.51	3.31	1.08	2.14	0.70	17.82
2	Kozhikode	100	35.85	13.00	17.87	2.31	3.90	1.05	2.97	1.04	22.01
3	Palghat	100	22.66	5.35	10.81	3.36	6.75	5.41	4.82	5.17	35.68
4	Trichur	100	23.39	13.54	12.73	5.28	5.10	4.61	3.57	3.43	28.36
5	Ernakulam	100	21.15	6.98	18.55	2.99	11.49	2.29	4.17	4.46	27.93
6	Kottayam	100	12.34	14.78	24.89	2.83	8.39	4.85	4.31	2.22	25.42
7	Alleppey	100	25.26	15.23	6.55	3.75	9.17	2.02	5.98	4.13	27.91
8	Quilon	100	37.55	13.20	8.77	2.14	9.19	1.44	4.18	2.36	21.19
9	Trivandrum	100	30.17	13.37	10.96	2.18	5.82	1.25	3.89	2.23	30.15

Table 20. Percentage Distribution of Inter-district Female Immigrant Workers to rural areas of the Districts in Kerala having birth place as rural areas by industrial categories

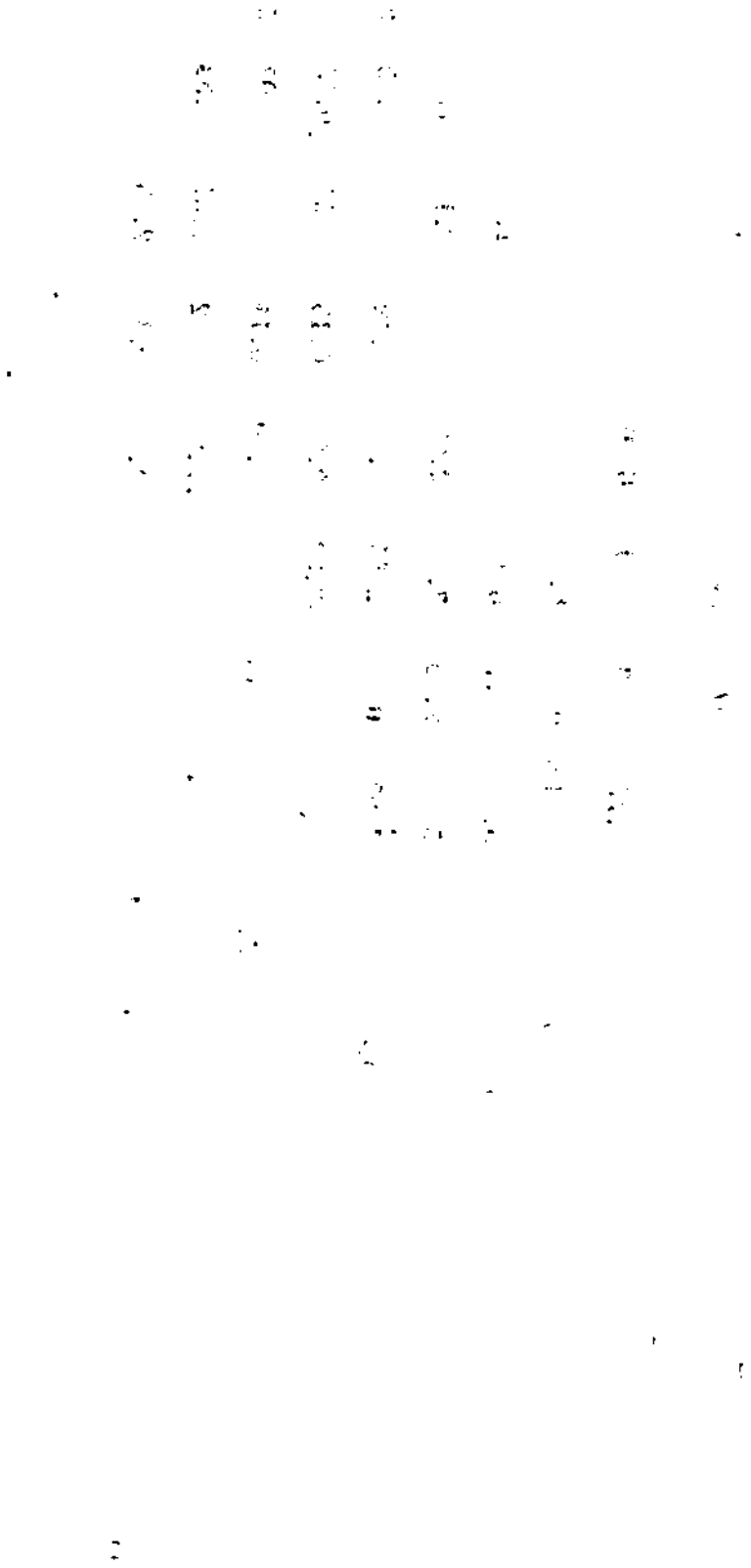
Sl.No.	Name of District	Total	I	II	III	IV	V	VI	VII	VIII	IX
1	Cannanore	100.00	54.12	16.77	7.38	4.10	0.60	0.04	0.07	0.06	16.86
2	Kozhikode	100.00	29.36	22.73	18.46	3.97	1.00	0.04	0.17	0.07	24.20
3	Palghat	100.00	21.47	25.81	5.97	9.85	2.28	0.23	0.61	0.19	33.59
4	Trichur	100.00	20.98	31.30	3.42	13.64	2.07	0.34	0.96	0.36	26.93
5	Ernakulam	100.00	21.67	19.14	5.52	13.95	6.58	0.08	1.61	0.34	31.11
6	Kottayam	100.00	10.31	25.09	25.51	12.82	2-10	0.46	1.37	0.26	22.08
7	Alleppey	100.00	12.45	27.00	1.22	32.32	5.25	0.04	1.16	0.06	20.50
8	Quilon	100.00	27.52	19.57	4.60	9.95	11.08	0.06	0.73	0.11	26.38
9	Trivandrum	100.00	17.00	16.00	3.50	11.05	7.47	0.07	0.86	0.20	43.85

Table 21. Percentage Distribution of Inter-District Male Immigrant Workers to Urban areas of Districts in Kerala having Rural areas as birth place by industrial categories

Sl. No.	Name of District	Male Immigrant Workers									
		Total	I	II	III	IV	V	IV	VII	VIII	IX
1	Cannanore	100	0.40	0.20	5:32	2.38	17.36	6.84	9.87	7.81	49.84
2	Kozhikode	100	0.70	0.36	2.64	3.39	17.48	3.64	12.40	10.38	49.01
3	Palghat	100	1.49	0.75	0.46	2.64	13.96	4.42	17.06	23.84	35.38
4	Trichur	100	2.62	1.47	2.86	3.10	10.63	2.78	12.10	10.36	54.11
5	Ernakulam	100	0.78	0.24	1.35	1.30	12.51	1.86	15.44	19.10	47.43
6	Kottayam	100	2.44	1.41	3.18	3.51	12.19	2.56	15.47	7.94	51.31
7	Alleppey	100	2.86	0.83	3.38	1.74	18.82	2.86	18.17	12.40	39.66
8	Quilon	100	0.42	0.68	2.94	1.13	20.45	2.49	14.15	10.50	47.26
9	Trivandrum	100	1.08	0.12	0.53	0.47	7.37	2.99	10.20	6.41	70.84

Table 22. Percentage Distribution of Inter-District Female Immigrant Workers to Urban areas of the Districts in Kerala having Rural areas as birth place by industrial categories

Sl. No.	*Name of District*	*Total*	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*
1	Cannanore	100.00	0.22	0.77	0.33	5.51	6.50	0.55	1.87	0.55	83.7
2	Kozhikode	100.00	0.76	0.98	0.23	6.65	7.86	0.30	1.28	2.95	78.99
3	Palghat	100.00	3.86	5.26	..	6.49	4.22	..	1.40	0.70	78.07
4	Trichur	100.00	5.24	5.36	2.80	7.93	2.68	0.23	2.11	1.86	71.79
5	Ernakulam	100.00	4.38	1.08	0.83	2.55	3.09	0.49	2.06	2.45	83.07
6	Kottayam	100.00	2.25	6.11	0.65	13.38	2.26	0.15	4.51	0.73	69.96
7	Alleppey	100.00	5.50	6.66	1.15	24.66	7.40	0.14	2.04	1.02	51.43
8	Quilon	100.00	0.22	0.34	0.11	3.59	22.09	0.22	1.01	0.33	72.09
9	Trivandrum	100.00	0.81	0.14	0.20	2.30	1.49	0.34	2.03	1.83	90.86



PART IV

Social and Medical Implications of the growth of population of Kerala

A. CHAIRMAN'S ADDRESS

Dr. C. O. Karunakaran, formerly President,
Indian Medical Association.

Friends,

Kerala is a small State with an area of about 15002 sq. miles inhabited by a large population of 169.04 lakhs according to 1961 Census. The density per square mile is thus 1127. This is more than three times the density for all India, a country which itself is often described as demographic trouble spot of the world. How much more alarming is then the problem of population in Kerala.

Between 1901 and 1961 the population of the State increased by 165% i.e., from about 64 lakhs in 1901 to 169 lakhs in 1961. The increase for all India was only about 85% during the corresponding period. Where as in 1901, the proportion of the population of Kerala to that of India as a whole was only 2.7% by 1961 it grew to 3.9%. The large growth rate of the population coupled with the initial high density—even in 1901 it was more than the present all India density—have made the demographic situation of the State far more disturbing compared to all other States of India. Another disturbing factor about the population of Kerala is the continuous increase in the growth rates of Kerala with the succeeding decades. These realities pertaining to the population of Kerala leave us no choice in formulating a policy of controlling it.

The high net rate of growth of the population of Kerala in recent decades is the result of a reduction in mortality unaccompanied by any appreciable reduction in birth rates.

The reduction in mortality rates brought about is the result of the several public health measures put through during the period, for which the Medical Profession in the State can justly be proud. But a similar emphasis was not placed on reducing births, which has resulted in the present difficult situation.

Therefore the clue to a reduction in the future growth rate of population lies in reducing the birth rates. All emphasis should therefore be placed on birth control and family limitation if we are to succeed in controlling the future population.

Birth control through the adoption of family planning methods to limit population was forlorn cause some years back when I first advocated it. Since then, a welcome change in the attitude of many sections of people has taken place in favour of it. Government of India has adopted it as a matter of policy and is pursuing it with all vigour. Even the church is showing signs of relaxing its' objection towards methods of artificial birth control. I am happy over these changes in the attitude of the people which forbodes well for the family planning movement in the State.

There are many birth control methods now in use. Among them, sterilisation and induced abortion are the best suited to the conditions in Kerala. Birth control through sterilisation should therefore be encouraged by all means at our disposal. But I feel that it is high time for us to adopt induced abortion also to reduce birth rates quickly. It is illegal in the State now to resort to induced abortion to avoid births except on Medical grounds. This should be changed. Measures to legalise induced abortion should be speeded up. In fact, it is only through induced abortion, as was done in Japan that a quick reduction in birth rates was ever achieved in any country in the past. I know that there are still sections of people who object to induced abortions on moral grounds. But let us remember that in countries where abortion is regarded as illegal as in Italy cases of illegal abortion are very large leading to many maternal deaths. In our country also, we know that such things do happen. It is not better to avoid them by legalising abortion? By this one legislative act we will be able to do away with the practice of illegal abortion resorted to by large numbers of people and also will help tremendously the family planning movement. Let us therefore who are assembled here, who represent the enlightened section of

the community in this regard, take a decision here that abortion should be legalised.

I am also happy that experiments are going on in the Medical College, Trivandrum with the intra uterine device which is a very effective method of birth control suited to the condition in Kerala. I would also recommended increased attention to perfecting oral contraceptives which also have good prospects to bring about success in birth control.

I would like to impress upon all concerned that the problem of population, being the number one problem of the State should be tackled with all earnestness. Half measures will not help. I am stressing this, in particular because we see side by side with the programme of family planning to control population, run by Government, it also encourages fertility by granting unrestricted maternity leave on full pay and other maternity benefits. Having adopted birth control as a policy it is strange that contradictory measures like those are still continued. It would be good if such benefits are limited to three births.

B. TECHNICAL PAPERS PRESENTED

1. MEDICAL ASPECTS OF THE GROWTH OF POPULATION IN KERALA

By

Dr. M. Thankavelu,
Principal,
Medical College, Trivandrum.

During the past two or three decades, the concept of the Health Services to be provided by the State has seen very important changes. From purely a curative approach emphasis is being laid on prevention and rehabilitation. The progress of medical science has substantially contributed to this concept. Diseases can be prevented and the diseased can be rehabilitated so that the burden on the society is being minimised.

With the increase of population in the State, it has become necessary to consider about who are to be benefited by the Health Services of the State. If the adult population can be protected from some of the infectious diseases such as typhoid, dysentry, enteric fever, tuberculosis, then the children and the old need the increasing attention of the Health Services. When the health problems of the children are tackled, the number of corrective measures instituted when they are young will prevent the deformities and their phychosomatic development can be influenced to such an extent that they can develop physically and mentally as alert and active citizens of the State. Thanks to our social system, the older people are being looked after by the younger generations. With increase in industrialisation, the health services will have to deal with the old age problem. Thus we will have to plan for the health of the children and the old in larger measure.

In planning the Health Services for a large population, rationalisation of the Health Services is very important. The days of the omnipotent general physicians are gone. Spacilisation has come to stay

and that means, in our training programme of physicians, greater emphasis has to be placed on training specialists. In the organisation of institutions again we have to locate institutions where there is need. We will have to take into consideration the modern transport facilities available and locate our centres of treatment in such a way that facilities can flow from these centres by means of mobile dispensaries or by travelling teams of specialists to provide service to suitably located sub-centres. At present a large number of diseased people migrate-towards institutions centralised in cities or in large towns. This wholesale migration can be stopped if our institutions can be properly located. Location of an institution should not depend upon any political pressure but it should be on a rational basis to meet the needs of the population. A regional service on a rational basis will serve the people better than locating innumerable ill-equipped and improperly staffed institutions.

For providing specialised and efficient health services adequate funds are essential. A welfare State should evolve an insurance system and this is very necessary for working out a good health services scheme. Such a system can be introduced at all levels and the public will also be happy that they have paid for the services rendered to them. The burden on the public when compared with the cost of relief they can have will be comparatively low. During the fourth plan the insurance scheme should be extended to all earning citizens.

Health Education is a very important fact in the organization of the Health Services and unless the citizen knows what is health and what is disease, unless he knows what is available and when and where, he will be all the time a discontended person demanding what he does not require. Further, for the preventive concept of medicine to be practised to its fullest extent, it is necessary to keep the public informed about the developments in the medical field and also about matters of positive health. A good department of Health Education which can ramify its activities into every walk of life, into every

institution is an essential pre-requisite for the success of health schemes during the fourth plan.

Research into health problems is also very essential. As our country is getting rapidly industrialised, the morbidity pattern will be changing and unless we are ready with preventive measures and also ready with a curative system it may not be possible to prevent industrial disasters. Where such disasters are inevitable, we should have readily planned rehabilitative measures so that the unfortunate will not feel that he is a miserable member of the society.

2. HOW TO ACHIEVE POPULATION CONTROL

By

Dr. G. Velayudhan,
Assistant Professor, Medical College,
Trivandrum

Introduction

The biggest problem that faces India to-day is the uncontrollable growth of her population. It is impossible for India to make any progress in any direction unless this problem is solved. Therefore this problem requires the most urgent and most serious consideration. The magnitude of this problem and its consequences, it appears, are not sufficiently appreciated by the nation at large. The importance of population control can never be over-emphasised. It would be wiser to deal with this problem first and foremost, even at the expense of postponing some of the developmental schemes, if need be. Therefore it is high time for us to explore all the possible means to make the family planning efforts of the nation effective as early as possible.

Principal objectives of Family Planning.

Married couples who wish to adopt birth control choose the total number of children they should have and the interval between each child birth. This is referred as child birth ceiling and child birth spacing respectively.

Child birth ceiling and child birth spacing.

Of these child birth ceiling is the solution for the problem of population control. The child birth spacing also has its due share in population control. By spacing alone the number of children in a family can be reduced. But if a sufficiently low child birth ceiling can be attained child birth spacing is not of much importance for reducing population growth. Nevertheless the fact remains that it would be difficult or even impossible to attain the object of a sufficiently low child birth ceiling in the near future. Therefore if the child birth spacing is encouraged side by side it would add to the result. Moreover, it would be easier to popularise child birth spacing than child birth ceiling among our people. Therefore this method also should be given due consideration.

What should be the child birth ceiling.

2, 3 or 4. It may be said that if child birth ceiling can be made one, that may be the most desirable as far as the problem of population control goes. But there are certain important practical aspects that cannot be overlooked or easily overcome. Desire to reproduce and to have young ones is one of the fundamental instincts of any living organism and man is no exception. Therefore it would not be easy to make a couple realise that it is enough to have only one or two children. There again comes the question of the sex of the children. Every couple would like to have at least one son and a daughter, thus making the minimum two. Therefore the question of child birth ceiling fixed at less than two does not arise. There is yet another difficulty. On several occasions the first two children may be of the same sex. Almost all the parents would then like to have a third one of the other sex. No amount of coaxing or persuation would change their mind in this respect. It is quite common that 3, 4, 5 or even more children of the same sex are born to a couple consecutively. Thus the man and wife are forced to go on to have a baby of the other sex in spite of the fact that they desire to limit the number to two or three.

Education and motivation.

Preparing the population to adopt family planning is the solution for population control. For this the people should first be taught how children are born to them—the physiology of re-production—and then the need to limit the size of their families for their own sake as well as for the sake of the nation. Once this is successfully achieved the rest of it is quite simple. Unless this part is efficiently done the introduction of family planning methods would not succeed. If people can be made to understand how children are normally born and to realise the pressing need to limit the number of children they would not only be in a receptive mood to understand and become familiar with the family planning methods but also would go in search of these methods. Therefore education and motivation is the most important aspect of the whole problem of population control. But it is also the most difficult aspect of the problem.

The following methods may be suggested to achieve this end.

To educate on these lines the population may be grouped as follows:—

1. *The illiterate and the socially backward group.*

This forms the bulk of our population. The maximum difficulty would be met with in educating this group. Most of these people would not be able to understand any language other than their own local or colloquial language. Therefore these subjects will have to be simplified and taught to them in their own common dialect. Picture demonstrations and model demonstrations would be quite useful for this purpose. They may taught in small groups as follows:

(1) *Physiology of reproduction.*

(a) group talks to husbands alone.

(b) group talks to wives alone.

(2) *Elements of demography.*

Group talks to husbands and wives combined,

After the talks there should be an interval of a few days during which the husbands and wives can confer with each other and take decisions regarding family planning. Following this, the methods of family planning should be taught to them as group talks to wives and husbands separately.

By this time these people would develop doubts and personal problems. Sufficient time and convenience must be made available to them to meet the workers separately, wives, the lady educators and men, the male educators to clear their doubts individually. Small units or teams must be arranged to go from village to village and educate the people like this.

As soon as the educating team has finished its function in one area, the next team shall start functioning for introducing family planning methods particularly the one meant for intensive sterilisation and other popular methods of family planning.

2. *The educated class.*

Their education and motivation on these lines is comparatively easy. It can be done to a large extent through the press, pamphlets and radio talks in the form of articles, quetsions and answers etc. The bulk of those who are coming forward now, to adopt family planning methods, are from this group. But large number of people in this group are also quite ignorant of the physiology of reproduction and elements of demography and do not realise the need for family planning and population control. So they also should be taught,but that would be comparatively an easy task.

3. *Children or the next generation.*

The best method of preparing the next generation of population to adopt family planning would be by including these in the syllabus of education. *Family Planning methods need not be or rather should not be included* in the syllabus of education. Physiology of reproduction and elements of demography of the population should be taught. It is better taught in the high school classes. The final object is to have

school final as the basic education. Only a fraction of those who finish school final may be benefited by higher education. So if it is included under the high school classes more number of students would be benefited by this. Physiology of reproduction may be included in that part of the biology which deals with human physiology and may be better taught in separate classes for boys and girls. Mixed classes are better avoided. Imparting of fundamental knowledge in the physiology of reproduction to these sexually maturing children would have the added benefit of preventing the young boys and girls from falling victims to bad habits, which are quite common in the sexually maturing age.

Elements of demography may be included along with social studies. The object of this is to teach about the population of different countries and a comparison of the rates of their growth, the disadvantages of rapid growth of the families and the reaction of this on the nation.

If this can be attained successfully the next generation would be well prepared to adopt family planning and limit their families. Of course it will not give immediate results. Family planning methods need not be taught even in college classes. A person who is made to appreciate and realise the disadvantages and danger of unlimited size of the family would go in search of them when needed.

Methods of Birth Control

1. *Sterilisation operation.*

There is no doubt that sterilisation operations are at present the most effective method in the direction of population control and this should be adopted as the principal method. It may be done on the men (vasectomy) or on the women (salpingectomy).

Vasectomy is simpler and easier to perform. There is no need for hospitalisation.

Salpingectomy is not so easy as vasectomy. But when this is performed immediately following child birth it is quite easy and simple and does not cause

any additional inconvenience or expenditure for the woman.

Hospitalisation. Normally a patient would be hospitalised for about 5-7 days following child birth. If the operation is performed within a day or two of child birth the mother can be discharged almost within this period. After the operation the stitches can be taken on the 5th day and the mother and baby can be discharged on the same day. Therefore no additional hospitalisation is required for the sake of the operation and the mother can be discharged on the 6th or 7th day of child birth after the operation.

Normally a woman abstains from conjugal relationship and heavy work for 6-12 weeks after child birth. Operation by itself does not require restrictions in these lines for more than 6 weeks. Therefore when the operation is undertaken along with child birth no additional restrictions are necessary.

It is often felt by some of the Medical men that salpingectomy could be performed only if the delivery is conducted in an institution and often salpingectomy is denied because the woman who wished ardently for sterilisation happened to deliver inadvertently at home. This is not necessary. In cases where the woman had normal delivery at home she can be transferred to the institution and after a period of observation for a period of 24-36 hours to exclude any sepsis, the operation can be done without any disadvantages. This may be encouraged and they may be given free ambulance service.

Though salpingectomy is done most conveniently for the woman as well as for the surgeon immediately after child birth, it can be very well done at other times also. The Surgeon will have to adopt then special technique to perform the operation through a small incision and the woman will have to be hospitalised for this alone and she will have to abstain from sexual inter-course and heavy work for 4-6 weeks.

Post operation period.

No antibiotics are needed as a routine after salpingectomy.

Though vasectomy may be preferred to salpingectomy for intensive sterilisation purpose, from the technical point of view and the convenience of the persons undergoing operation are concerned there is not much difference between vasectomy and salpingectomy and the choice between vasectomy and salpingectomy must be entirely left with the desire of the husband and wife. This would no doubt help to effect larger number of sterilisation operations performed.

It is the fear of the operation and its after effects that make majority of the people reluctant to undergo the operation. This will have to be correctly dealt with in the education and motivation programme.

Persons who have undergone sterilisation are the best agents to popularise sterilisation. One who has undergone sterilisation will be able to convince others of the simplicity and harmlessness of the operation and induce them to adopt this method. When each person is being sterilised it must be fully realised that he or she is going to convey their experience to others. If the operation is readily and conveniently done to one person his experience would help to attract several others to the operation table. On the other hand if one had to experience difficulty to undergo operations or develops any complications or if one meets with difficulties to see the surgeon to get relief from uncomfortable after-effects etc., such incidences would go a long way to dissuade others from undergoing the sterilisation. Therefore these operations must be done in the best and easiest manner possible as well as with the greatest care and the possibility of complication and failures must be reduced to the minimum.

When a person desires to get operated the set up must be such that he can have it done readily and without any inconvenience for him. Sufficient privacy also should be ensured. It is essential that these operations should be done *only by well trained and experienced persons.* This has got two fold effects. If people are under the impression that these operations are performed by experienced people they would

not feel reluctant to come forward for operation. On the other hand if there is a feeling that these are done by junior and inexperienced people it is only natural that they would be reluctant to subject themselves for the operation. If any complication occurs after the operation even if it is quite trivial or failure occurs, it would have great repercussions on the popularity of this method. Therefore this should be done by a team which is permanently set up and manned by well trained and experienced personnel. If after operation a complication or difficulty arises, the operated person must have easy approach to the surgeon or the team whom he can meet and seek relief. But on developing a complication if one finds it difficult to get immediate and proper assistance this would naturally dissuade others from undergoing operation.

The operation must be performed in the most attractive and appealing fashion.

Pain.—Special care should be taken to see that these operations are made completely painless. Sufficient care and patience on the part of the surgeon can achieve it. It must be made a well established fact that these operations are always performed without causing any pain.

Incision.—The layman is always carried away by the size of the incision. These operations should be done through the smallest incision possible. This is particularly important for salpingectomy. While salpingectomy can be done through 1|2 to 1|4 inch incision with a little training and experience, there are several occasions where the incisions are so large as that of caesarean sections.

The sterilisation operations have to be considered now as irreversible. But the possibility remains and attempts must be made to make it reversible. This is essential to achieve sufficient low child birth ceiling. In case it is proved that fertility could be regained with fair amount of success, more and more people are likely to come forward for the operation because several people are reluctant to get sterilised

after 2 and 3 children because the method is a permanent one.

2. *Induced abortion.*

The fact that Japan could successfully achieve population control by this method makes us seriously consider this question in spite of the fact that there are certain serious disadvantages. The greatest disadvantage of this method is that induction of abortion will have to be repeated several times in the same woman. After one abortion the woman would become pregnant again within another few months and the woman would again come back for abortion and thus abortion may have to be induced in the same woman 3 or 4 or even more times during the course of one year. Abortion can be safely and successfully achieved only by surgical methods requiring general anaesthesia. The surgical methods of abortion are not completely safe to the mother especially when it is repeated. Induced abortion involves destruction of a life may interfere with the popular sentiments.

In spite of all these I wish to stress that we may have to consider seriously about its introduction because we are now in a great crisis than Japan was when they introduced and attained success in this direction.

Injection of hypertonic solution into the uterine cavity to induce labour and abortion in cases of intrauterine death of foetus and for inducing therapeutic abortion have been tried with good results. This has proved to be a safe and reliable method. But it is often used when pregnancy is fairly advanced and uterus is palpable per abdomen. It is worth conducting a detailed study on these lines and it may be possible to find out a simple and safe method of induction of abortion.

It is worthwhile, rather essential that some of the Indian experts who are interested in this are sent to Japan to make a detailed study and gather first-hand information on the subject before we consider about its introduction here for population control.

3. *Non-appliance method of contraception* namely the coitus interuptus and Rhythm method are the least reliable methods of contraception and do not deserve any consideration in this programme.

4. *Appliance methods of contraception.* There are rubber appliances and chemical appliances and Masculine appliances and Feminine appliances. Thus there are several methods.

In popularising the appliance method it should be the rule that only 1 or 2 appliances which are proved the most effective and easy to practice should be introduced. Introduction of too many appliances would only cause more confusion among the people. Of these, the sheath is found to be the best and it appears this is the only method that deserves popularity. Failure rate with all these methods including sheath is quite high and appliance method of contraception should be advocated only for child birth spacing and not for child birth ceiling.

In selecting the methods of contraception it will be advantageous to select one which does not require the constant personal attention of the husband or the wife. At the same time it must be simple, cheap and easily administered.

Intrauterine coil.—This appears one with great promises and may prove to be the ideal under our circumstances. In this method a poly-ethylene coil is introduced into the uterine cavity and it may be left inside indefinitely. As long as the coil is inside, the woman does not become pregnant. On removing the coil the woman becomes pregnant. Therefore it is equally useful for child birth ceiling as well as child birth spacing. Introduction of the coil into the uterus is quite simple and easy procedure and can be done during a routine gyanecological examination and does not require any elaborate preparations. It does not take more than few minutes. Extensive trials have been conducted in other countries particularly in Japan and U.S.A. and encouraging results have been reported. Trials are being conducted in some centres in India also with the help of the Ford Foundation for the last few years. I too have been

conducting a trial on a small number since 1½ years. The experience gained so far gives an impression that it is quite safe and effective. The reported incidence of failure is about 2 per cent and occasionally the coil comes off in which case it has to be reintroduced. It does not seem to produce any discomfort and all those women have volunteered to have it are quite happy with this method. Occasionally the first few periods following the introduction of the coil are a little excess and occasional spotting of blood occurs. The results of the present trial do not permit me to draw any final conclusions but it encourages me to conduct an elaborate and detailed study on it and there is sufficient reason to feel that it may prove an ideal contraceptive method in the near future and may replace even the operative methods of sterilisation. It is necessary to conduct a detailed study to prove or disprove its safety and efficacy. There is no doubt that it would be the cheapest of all the existing methods and easiest for the people to practice. Once it is introduced the lady need not care about it unless it comes off in which case it is to be reintroduced.

5. *Oral contraceptives.*—Fair amount of encouraging reports are available from other countries. But it has got some definite disadvantages. It is probably the most costly method. The woman should swallow regularly one tablet a day. If she fails for 1 or 2 days the method fails. Majority of the women even intelligent and educated one are found to fail in taking these tablets regularly. This does not appear to be a method which may prove to be of much use under our circumstances.

Personnel.—Selection of the personnel required for the implementation of the scheme should be made with the utmost care. Persons who sincerely believe in the principles of family planning should alone be selected. Young and unmarried men and women will not be able to discuss the problem freely and convince people and induce them to undertake it. As far as possible persons who have undergone sterilisation should alone be selected. At the same time it is worthwhile to remember that a married woman with a number of children will not be able to devote so

much time and energy as a young and unmarried girl. Persons who have already shown some interest and aptitude in the propogation of family planning should alone be selected wherever possible.

It may not be possible always to get full time personnel for this. This is particularly so in the case of Medical personnel. It is not essential to have full time persons. Persons may be employed on a part-time basis giving an attractive allowance. Their work should be assessed in terms of the number of persons that could be induced for sterilisation. The remuneration should be proportional to the number of cases one could induce successfully. Teachers and staff members attached to the N.E.S. Blocks and other such Government servants may be recruited on a part-time basis for the education and motivation.

Training.—All those who are selected for the working of the schemes should be given proper training. The success of the education and motivation would greatly depend on the training of these persons. It is essential to have training centres for each area of reasonable size. Once persons are trained and sent to the field they would have to face fresh probelms. Therefore periodically they should be called back to the centre where they can be trained further to overcome the fresh difficulties. Training is necessary not only for the education and motivation but also for the medical officers and other staff members. It would be advantageous to convert these training centres into research-cum-training centres where studies can be made on the contraceptive methods, operative procedures and their after effects and efficacy etc. It may be enough if there is one such centre for each State.

Separate Ministry and department.

Now the programme of family planning is a part of Health Department. For the efficient functioning of the scheme it is felt, essential to have separate ministry and separate department for Family Planning.

3. EFFECT OF EDUCATION ON FERTILITY IN KERALA

*G. K. Mehrotra**
(Office of the Registrar General India)

Kerala is one of the premier States of India, where literacy level is at the highest. It is also observed that the fertility in Kerala is comparatively high. Naturally one would be very much interested in knowing whether there is any relationship between education and fertility. One would also like to pose questions, "Is the husband's education more effective than mother's education?" "Whether there are any rural urban differentials?" "What is the distribution of population according to educational level and marital status and so many other similar questions?". The paper aims at a systematic discussion of the various factors influencing fertility. The measures used for studying fertility are (1) Age Specific fertility rates, (ii) Average number of children born per woman, (iii) Parity progression ratio, (iv) Distribution of families by number of children born and (v) Age at effective marriage. The data on fertility relate to fertility survey carried out in the year 1961 under the supervision of Superintendent of Census Operations, Kerala and under the technical guidance of Registrar-General India. 1961 Census data have also been used, while studying the distributions of population according to marital status and educational level. The educational levels considered are: (i) Illiterates, (ii) Elementary and Primary, (iii) High school and (iv) Graduate and above. Age specific fertility rate (ASFR) is expressed as 1,000 times the ratio of women giving births in the last twelve months in the specified age group to the total women of that group. Parity progression ratio (PPR) for order n is defined as the probability for a woman with n children to have n+1th child, it is generally expressed in percentage. The complementary to

*Views expressed here are those of the author and not necessarily of the Government of India.

The author is greatly indebted to Sri A. Mitra, Registrar General, India for permiting to use the fertility survey data for the paper

Parity progression ratio is the sterility ratio, which is used to denote the probability of cessation of birth after a specified number of births. The paper is divided into two sections, the first part deals with the distribution of population and the second with the various fertility measures.

PART I

Characteristics of the Population: The following gives the sex-age distribution of population for rural and urban areas separately according to 1961 Census.

Age group	*Rural*		*Urban*	
	M	*F*	*M*	*F*
0-4	15.1	15.5	14.1	13.7
5-9	14.6	15.0	13.8	13.3
10-14	13.3	13.5	13.1	12.9
15-19	8.4	8.1	8.9	9.2
20-24	8.4	8.0	8.9	9.1
25-29	7.6	7.1	7.8	8.2
30-34	6.3	6.2	6.7	6-7
35-44	10.3	10.5	11.2	10.6
45-59	10.1	10.3	10.4	10.3
60+	5.9	5.8	5.1	6.0

Women of reproductive age group (15-44) account for 39.9% and 43.8% of the respective total female population in rural and urban areas respectively. Male Labour Force population (15-59) shares 51.1% and 53.9% of the total male population in rural and urban areas respectively. Population of younger age group 0-14 is relatively higher in rural than in urban.

The distribution of females according to their marital status is of great significance in the context of studying fertility. Table below gives the percentage distribution of women by their marital status in the specified age groups for rural and urban areas separately.

Age Group	Never Married		Married		Widowed, Divorced or separated	
	R	U	R	U	R	U
10-14	98.6	99.0	1.4	0.9	..	0.1
15-19	68.7	74.5	29.3	24.4	2.0	1.1
20-24	21.5	29.6	73.3	66.5	5.2	3.9
25-29	7.1	13.1	84.9	80.0	8.0	6.1
30-34	4.1	6.6	84.5	82.4	11.4	11.0
35-39	3.0	4.7	81.8	79.0	15.2	16.3
40-44	2.6	4.4	74.1	70.4	23.3	25.2
45-49	2.0	3.4	68.4	62.5	29.6	34.1
50-54	1.6	3.1	56.4	49.9	42.0	47.0
55-59	1.3	2.5	48.8	41.1	49.9	56.4
60-64	1.0	1.9	33.5	26.7	65.5	71.4
65-69	0.8	1.5	27.2	21.6	72.0	76.9
70+	0.8	1.4	12.3	8.9	86.9	89.7

Incidence of widowhood, divorce and separation rises with increase in age. In the younger age groups (10-29), the incidence is relatively higher in rural than in urban but later on the position is reversed. Starting with a small value at the age group 15-19, the proportion of married women shows a steady rise till it reaches its maximum at the age group 30-34. Universality of marriage is not observed in any age sector. Even in the older age groups (above 60), 1 to 2% of the total women remain unmarried. A quite substantial proportion of women in the age group 15-19 remain unmarried, which is a characteristic feature for the State of Kerala, where late marriages are more common. In the reproductive age group (15-44) about 21% and 26% of women in rural and urban areas respectively are unmarried, while the corresponding figures of widowed, divorced or separated are 9% in both. Nearly 70% in rural and 65% in urban of the total women remain in the married state in the age group 15-44.

The following table gives the proportion of illiterates, literates and primary and matriculates and above in the different age groups for males and females separately in rural and urban areas based on 1961 Census data.

Age Group		Illiterate		Literate and primary		Matriculates and above	
		M	F	M	F	M	F
0-4	R	100.0	100.0	..	..	..	..
	U	100.0	100.0	..	..	..	..
5-9	R	69.5	71.7	30.5	28.3	..	..
	U	61.0	62.0	39.0	38.0	..	..
10-14	R	22.5	31.4	77.5	68.6	..	..
	U	16.0	22.8	83.8	77.0	0.2	0.2
15-19	R	21.2	35.1	72.6	70.9	6.2	4.0
	U	13.7	24.7	68.2	61.9	18.1	13.4
20-24	R	24.1	44.5	64.3	49.8	11.6	5.7
	U	15.6	32.5	58.4	51.6	26.0	15.9
25-29	R	28.0	52.3	63.3	44.4	8.7	3.3
	U	18.8	39.7	60.2	49.9	21.0	10.4
30-34	R	27.4	53.8	66.9	44.5	5.7	1.7
	U	18.4	42.7	64.9	50.3	16.7	7.0
35-39	R	31.6	62.3	65.3	37.0	3.1	0.7
	U	21.5	51.8	65.7	44.2	12.8	4.0
40-59	R	39.0	74.5	58.4	25.2	2.6	0.3
	U	28.1	64.3	59.8	33.4	12.1	2.3
60+	R	48.7	85.3	49.9	14.6	1.4	0.1
	U	38.6	76.4	52.4	23.0	9.0	0.6
All	R	46.4	62.5	50.5	36.2	3.1	1.3
	U	37.2	53.0	52.9	42.3	9.9	4.7

Literacy is higher among males than in females, while the percentage of illiterates is more in rural than in urban. Matriculates and above account for 3.1% and 1.3% among males and females respectively in rural areas; the corresponding percentages for urban are 9.9 and 4.7. Comparatively, lesser proportion of illiterates are observed in the younger age groups (10-24) than in the older age groups (25+). This shows that illiteracy is gradually declining with the passage of time. Literates and primary passed form sufficiently high proportion both among males and females. Women in the reproductive age group (15-44) are distributed according to their educational standard in the following manner.

	Illiterate	Primary & Literate	Matriculate & above
Rural	49.7	47.2	3.1
Urban	38.5	51.4	10.1

It may be seen that the matriculates and above account for fairly low proportion of women particularly in rural areas. Presuming that woman's higher education is responsible for reduction in fertility, even then we may not expect substantial reduction in the overall fertility since women with

higher education account for insignificant proportion among the total women of reproductive age group.

Classifying the male population aged 20-59 according to their educational standard, we get the following distribution.

	Illiterate	*Primary & literate*	*Matriculate & above*
Rural	30.7	63.3	6.0
Urban	20.9	61.8	17.3

Here again we observe that 'Matriculates and above' form a very low proportion of the total male population in the age sector 20-59, which is generally the age group in which males remain in the married state. On the assumption that higher education may produce a reduction in fertility, we may expect only nominal fall in over-all fertility unless there is a rapid rise in the educational level of the masses.

PART II

The second part of the paper is related to the study of fertility measures in conjunction with the educational levels. The table below gives the Age-specific Fertility rates for women of different educational standards for rural and urban areas separately. For all practical purposes, elementary passed are taken as equivalent to 'Primary & Literates'.

Age specific fertility rates by women's education

Age group		*Illiterate*	*Elementary*	*High School*	*Graduate & above*
13-17	R	75	103	*	*
	U	93	70	*	*
18-22	R	260	300	228	*
	U	237	252	286	*
23-27	R	310	321	331	*
	U	277	331	220	@77
28-32	R	277	266	320	*
	U	223	255	162	59@
33-37	R	216	234	343	*
	U	184	210	116	91@
38-42	R	117	140	59@	*
	U	104	112	83	*
43-47	R	40	37	*	*
	U	*	*	*	*
48+	R	3	4	*	*
	U	*	*	*	*

*Not calculated since the number of women in the sample is either 10 or below 10.
@Results are based on number of women above 10 but below 25.

Generally, the fertility rates are lower in urban than in rural for all class of women. Fertility level is at peak in the age group 23-27, while the age groups 18-22 and 28-32 are a shade behind. The difference between the fertility rates of 'Illiterates' and 'Elementary passed' though not substantial is a marked one, the latter leading the former. While comparing High school passed with Illiterates and Elementary, it is seen that there is a definite declining trend in the fertility rates for women in urban areas, while no such effect is visible in rural areas. From the above, we may infer that the fertility of women gets lowered only provided the educational attainment of women is of High school standard or above.

Examining the age-specific fertility rates of women classified according to the educational standard of their husbands, we arrived at the following results:

Age-Specific Fertility rates by Husband's Education

Age group		*Illiterate*	*Elementary*	*High School*	*Graduate and above*
13-17	R	74	94	137@	*
	U	57	82	333@	*
18-22	R	258	298	269	120
	U	218	252	321	220
23-27	R	310	324	283	327
	U	269	328	234	275
28-32	R	271	279	277	344
	U	223	244	215	143
33-37	R	217	236	172	111@
	U	181	210	149	135
38-42	R	124	116	133	83@
	U	86	127	108	65
43-47	R	44	34	17	*
	U	25	17	0	0@
48+	R	3	2	0	0@
	U	9	@	0	0@

*Not calculated since the number of women in the sample is either 10 or below 10
@The results are based on number of women above 10 but below 25

The findings of this table are very much similar to those of the previous one except for the fact that the reduction in fertility at the High school and above level in urban areas is visible only in the later age groups while in the case of woman's education reduction is noticed in the younger age groups as well. Even at the 'Graduate Level' the fertility rates

have not declined in all age groups as is seen for woman's education. It may, therefore, be inferred that the effect of husband's education on fertility is not so pronounced as that of woman's education. Elementary education has practically no effect in reducing the fertility. Whether it is husband's education or woman's education, the reduction in fertility rates with higher educational standards are only seen in urban and not in rural. It may, therefore, be a sufficient indicator of the fact that the urban population is relatively more conscious about the family limitation practices than their rural counterparts. But for the limitation of data collected in the fertility survey, the study of the joint effect of woman's and husband's education on fertility, which would have thrown out interesting results, has not been practicable.

General fertility rate for women of age group (13-47) along with the Fertility Index according to Woman's and Husband's Education work out as follows:—

		Illiterate	*Elementary*	*High School and above*
Woman's	R	218 (100)	252 (116)	284 (131)
Education	U	190 (100)	230 (121)	168 (89)
Husband's	R	219 (100)	242 (111)	230 (131)
Education	U	180 (100)	242 (135)	192 (107)

Since no woman of 'graduate and above' level are found in the younger age groups, the categories High school' and 'Graduate and above' have been combined.

A sharp rise in fertility is observed from 'Illiterate' to 'Elementary'. This may be due to (i) availability of comparatively better hygienic facilities and nutritional diet, (ii) the fact that the Elementary group is still unconscious about voluntary family limitations. The 'High school and above' level of education shows a sign of decline in fertility in urban areas, perhaps the people of this group feel the urge of self-restrain in family building, because the amenities they expect to have consonant with their status may be a far cry from their realisation with expanding family size. The non-declining trend of fertility

with increasing standard of education in rural areas seems to be due to psychological factor alone. Perhaps the better means of life available at their resources does not offer an opportunity to them to think in terms of restricting family size.

The table below gives the average number of children born per woman by duration of married life for different educational standards of woman. For convenience, married durations are taken as 1-4, 5-9, 10-14, 15-29 and 30+ years.

Average number of children born per woman

Educational Standard of woman / *Marriage duration in years*		*Illiterate*	*Elementary*	*High School*	*Graduate and above*
1-4	R	0.8	0.8	0.8	1.3@
	U	0.9	0.9	0.8	0.9@
5-9	R	2.2	2.3	2.3	*
	U	2.3	2.4	2.3	1.5@
10-14	R	3.6	3.7	3.1	*
	U	3.7	3.9	3.2	2.4@
15-29	R	5.4	5.4	4.7	*
	U	5.3	5.3	4.2	*
30+	R	6.1	6.2	*	*
	U	6.1	5.7	3.7@	*

*not calculated since the number of women in the sample is either 10 or below 10.
@results are based on number of women above 10 but below 25.

In the first ten years of married life there is practically no difference in the average number of children born per woman of different educational standards. The average shows a significant fall for High school and Graduate women from duration 10 years and onwards. This suggests that in the first few years of married life women care little for restricting the births, but in the later period of married life educated women become more susceptible to the recurrence of births, which results in lesser average.

The average number of children born per woman according to the educational standard of the husband may also be of interest in deciding about the effectiveness of type of education in controlling fertility.

The following table gives the relevant statistics in this regard.

Average number of children born per woman

Educational standard of husband / *Marriage duration in years*		*Illiterate*	*Elementary*	*High School*	*Graduate and above*
1-4	R	0.8	0.8	0.8	0.9
	U	0.8	0.9	0.9	0.9
5-9	R	2.1	2.3	2.2	2.4
	U	2.2	2.3	2.4	1.8
10-14	R	3.6	3.7	3.4	2.9
	U	3.6	3.6	3.7	3.4
15-29	R	5.4	5.4	5.0	4.7
	U	5.3	5.3	4.9	4.3
30+	R	6.1	6.1	6.2	6.8@
	U	6.0	6.0	5.3	5.2

@The results are based on number of women above 10 but below 25.

Fertility performance of women having 'Elementary Passed' husbands is in no way inferior to those having Illiterate husbands. There is some drop in the average number for women whose husband's education is either 'High school' or 'Graduates and above' compared to those of Illiterates and Elementary.

A study of the average number of those women having marriage duration 15 years or more may reflect the effect of education; since most of such women complete their families by this period. The relevant averages in this regard are given below:—

Average No. of children born per woman with marriage duration 15 years or more

Educational Standard / *Nature of Education*		*Illiterate*	*Elementary*	*High School*	*Graduate and above*
Woman	R	5.6	5.6	4.9	*
	U	5.6	5.4	4.1	2.1@
Husband	R	5.6	5.6	5.4	5.2
	U	5.6	5.5	5.0	4.5

*Not calculated, since the number of women in the sample is either 10 or below 10

@Not reliable since the results are based on number of women above 10 but below 25

The above clearly shows that education upto Elementary no good for reducing the fertility; some reduction is, however, achieved at the High school stage, which is more marked in the case of woman's education than husband's education. Reduction in the average number at the Graduate level is quite substantial in case of woman's education which is

quite natural as well, since such women marry at considerably later ages resulting in the reduction of the most potent period of fertile life.

An examination of next measure of fertility 'Parity Progression Ratio' may give an idea as to how the family size progresses with parity order. The followng gives the Parity Progression ratio for women who have completed 15 years or more of married life.

Parity Progression Ratio

Parity Order / *Educational standard Woman's*		0	1	2	3	4	5	6	7	8	9+
Illiterate	R	98	97	95	91	85	76	68	61	54	47
	U	98	95	94	90	86	78	69	66	61	51
Elementary	R	98	97	95	90	83	74	67	61	52	49
	U	97	95	93	90	82	76	69	61	59	50
High School	R@	100	98	93	87	68	70	44	43	67	..
	U@	94	94	90	69	70	62	70	56	33	33
Graduate * and above	R	Not calculated due to small number of women in the sample.									
	U										
Husband's											
Illiterate	R	98	97	95	91	85	76	67	60	53	48
	U	98	94	94	90	85	80	69	56	61	54
Elementary	R	98	97	96	90	83	74	68	61	55	54
	U	98	95	94	91	85	76	68	62	59	46
High School	R	97	96	95	89	82	71	63	77	51	45
	U	96	97	89	86	75	74	74	63	55	52
Graduate	R@	100	96	81	89	84	85	73	60	36	50
and above	U	97	93	91	74	72	71	73	67	56	50

*Not calculated since the number of women in the sample is either 10 or below 10.

@The number of women on which the results are derived are below 50.

The parity progression ratio declines smoothly with rise in parity order, which is quite reasonable as well. One would expect that the probability for a woman having n children to go for n+1 th child should be lower than the probability for a woman having n—1 children and going for nth child. This fact is very clearly supported from the statistics presented in the above table. It will be seen that the probability for a woman with no child to give birth is very high and is in the vicinity of certainty for all class of woman. This probability reduces to nearly half in the case of women having 9 children and aspiring for next birth. A comparison inter-se

of the parity ratios with respect to educational standards would indicate that upto parity order 2, the parity ratios vary within a very close range suggesting thereby that people do not care much for restricting family size upto 3 children. From Parity Order 3 and onwards the parity ratios for High school and Graduates are lower compared to Illiterates and Primary passed particularly in case of woman's education. This shows that educated wives are more conscious about restricting family size.

Parity progression ratio for women with duration of married life 1-4 years may reveal their current attitude towards the phenomenon of births. The table below gives the parity ratios for women of different educational standards.

Parity order	0		1		2		3	
Educational standard	*R*	*U*	*R*	*U*	*R*	*U*	*R*	*U*
Woman's								
Illiterage	61	67	24	26	10	9	2	..
Elementary	66	68	25	29	9	15	10	20
High School	67	67	22	20	..	7	..	..
Graduate & above	Not calculated due to small number of women in the sample.							
Hanband's								
Illiterate	61	64	24	26	10	10	21	..
Elementary	66	69	25	29	8	16	16	17
High School	65	70	25	23	10	4	..	..
Graduate & above	70	71	21	31	17	..	..	..

The current level of thinking in regard to occurrence of births do not indicate any great differentials according to educational standards. Parity progression ratio of order O, which is taken as the probability of becoming mother, rises with the educational level. This is true to a great extent, since women with higher technical educational standard are bound to be comparatively more mature for conceiving because of their higher age at marriage. We also find that parity ratio of order O is higher in urban than in rural, which may be probably due to higher age at marriage in urban than in rural. In the first five years of married life, nearly 1|3rd of the total women remain sterile. As will be seen, the percentage of sterile women goes on diminishing as the marriage duration is increased.

The table below indicates the percentage of childless women at different stages of married life

Duration of married life	1-4		5-9		10-14		15-29		30+	
Educational standard	*R*	*U*	*R*	*U*	*R*	*U*	*R*	*U*	*R*	*U*
Woman's										
Illiterate	39	33	8	8	3	5	2	2	2	2
Elementary	34	32	5	7	2	2	2	3	1	4
High School	33	33	5	6	2	10	..	6	..	5
Graduates & above	Not calculated due to small number of women in the sample.									
Husband's										
Illiterate	39	36	8	10	3	6	2	2	2	3
Elementary	34	32	5	5	3	3	2	3	2	2
High School	35	30	7	7	4	3	2	4	4	4
Graduates & above	30	29	7	11	4	6	..	5	..	..

It is quite natural to expect that the proportion of childless woman should decline with the rise in the duration of married life. While the proportion of childless women in the duration 1-4 years is nearly 1|3rd of the total women, it suddenly slumps down to 8 to 10% in the duration 5-9 years. Percentage of women remaining sterile upto 10 years of duration of married life is not more than 10% for any class of women. In the earlier duration (1-4 years) sterility is higher in rural than in urban; while in the later durations the position is reversed. No significant relationship is observed between the proportion of childless women and their educational standard.

The distribution of families by the number of children born is given below according to different educational standards. Women with duration of married life 15 years or more are considered, since the family size of such women is considered more or less complete.

Percentage distribution of families according to number of children born

Number of children born per woman	0		1-3		4-5		6+	
Educational standard	*R*	*U*	*R*	*U*	*R*	*U*	*R*	*U*
Woman's								
Illiterate	1.8	2.3	16.4	19.4	29.3	25.8	52.5	52.5
Elementary	1.8	3.0	16.4	20.1	31.9	29.0	49.9	47.9
High School	0.0	6.1	20.9	39.8	41.9	30.6	37.2	23.5
Graduate & above	Not calculated due to small number of women in the sample.							
Husband's								
Illiterate	1.7	2.4	16.5	20.2	28.9	24.9	52.9	52.5
Elementary	2.0	2.6	15.9	18.3	31.6	27.9	50.5	51.2
High School	2.8	4.2	18.8	24.7	32.8	31.8	45.6	39.3
Graduate & above	..	3.3	31.2*	36.7	20.0*	29.1	48.8*	30 9

*Not reliable since the number of women in the sample is below 50 but greater than 10.

Classification of women with 1-3, 4-5 and 6+children is made to indicate 'low', medium and large sized families. Compared to Illiterates and Elementary proportion of large sized families are lower for High school and Graduates. Low sized families are relatively more common among Graduates and above than among women of other educational standards. Proportion of low sized families is higher in urban than in rural, while the position for medium and large sized families is just the opposite. The effect of education particularly those of women is relatively more perceptible in urban than in rural—a fact which may be seen in the rising proportion of low sized families with increase in the educational standard.

The quantum of reduction in fertility with the rise in the educational standard is a subject which needs further investigation. A rough and ready measure of the average number of children born to woman of completed fertility may be used for the purpose; the relevant figures in this regard are as follows:

Educational standard		*Illiterate*	*Elementary*	*High School*	*Graduates and above*
Womans	R	6.0 (100)	6.0 (100)	5.4 (90)	*
	U	5.9 (100)	5.4 (92)	4.1 (70)	@1.9 (32)
Husband's	R	6.0 (100)	6.0 (100)	5.7 (95)	@5.6 (93)
	U	5.8 (100)	5.7 (98)	5.1 (88)	4.8 (83)

@Based on small number of women in the sample.

*Not calculated since the number of women was below 10.

Figures in bracket give the index of fertility, considering the fertility performance of illiterates as standard. Compared with illiterates, the reduction upto Elementary is practically negligible particularly so in rural areas. However, there is some reduction at the High school and Graduate levels especially in urban sector.

An indirect method for measuring reduction in fertility can also be obtained by studying the average age at effective marriage for women of different educational standards. This average age coupled with the age specific fertility rates may give out the effectiveness of education. Prima facie we do not have

any sound proof about the fact that the educated women are less fertile compared to illiterates. Presumably, the lower average for High school and Graduate women may be due to reduction in their fertile period because of their higher average age at marriage.

An examination of the average age at marriage for women of different educational standards would make the point clearer. For this purpose, two sets of women with durations 1-4 and 10-14 years of married life have been considered, which would also indicate the shift in age at marriage with the passage of time. The table below gives the mean age at effective marriage of women with different educational standards:—

Mean age at Effective marriage of Women

Educational standard		*Illiterate*	*Elementary*	*High School*	*Graduates and above*
Duration 1-4	R	18.1	18.8	21.2	24.5@
	U	18.3	19.0	21.3	25.0@
Duration 10-14	R	17.1	17.6	20.4	*
	U	16.8	17.7	20.2	25.1@

@Based on small number of women in the sample.

*Not calculated since the number of women in the sample was below 10.

Evidently, there has been on an average a rise of 1 to 1.5 years in age at marriage in course of 10 years. Average age has also shown an increase with the elevation of educational standard. Rural urban differentials in respect of age at marriage are practically non-existent. Starting with the assumption that the age specific fertility rates do not differ appreciably with the women of different educational standards, it may be possible to assess the reduction in fertility because of the rise in average age at marriage. The following are the Age specific fertility Rates irrespective of the differentials of education for rural and urban areas.

Age group	*Rural*	*Urban*
13 17	82.3	95.2
18-22	272.6	245.6
23-27	314.0	293.4
28-32	274.8	230.1
33-37	221.9	189.8
38-42	121.5	105.1
43-47	39.2	18.9
48+	2.9	4.5

Taking a synthetic cohort of 1000 women of each educational standard with mean age at marriage as given in the previous table and subjecting them to the above A.S.F.R. schedule, we may expect the average number of children born per woman of completed fertility as follows:—

Average no. of children born per woman

Educational standard		*Illiterate*	*Elementary*	*High School*	*Graduates and above*
Duration 1-4	R	6.20	6.01	5.35	4.08
	U	5.35	5.19	4.62	3.32
Duration 10-14	R	6.30	6.26	5.47	3.73
	U	5.54	5.45	4.89	3.58

Considering the average of illiterates as 100, the relative indices for women of other educational levels is as follows:—

Educational standard		*Illiterate*	*Elementary*	*High School*	*Graduates and above*
Duration 1-4	R	100	97	86	66
	U	100	97	86	63
Duration 10-14	R	100	99	88	59
	U	100	98	88	65

This clearly supports the earlier view that the reduction in fertility level is practicable provided the educational attainment of women is that of High school and above. In case of uncontrolled fertility, a reduction by 15% and 33% would be possible in the fertility of women who have studied respectively upto High school and Graduates and above levels.

It would thus appear from the above discussions that there do exist differentials with respect to the education. These differentials are more prominent in respect of woman's education than those for husband's education. Education upto Elementary level do not seem to have any effect in the reduction of fertility. The effects of education on fertility become very clear for High school and above. These can be greatly explained by the fact that the higher education results in the postponement of the marriage thereby reducing the length of fertile period. It would, however, be incorrect to infer that intrinsic fertility of educated women is lower than that of

uneducated women. Mostly, the difference in fertility on account of education is due to higher age at marriage. Some reduction in fertility may also be attributed to the basic thinking of educated women towards family limitation, but it is not so important a factor as that of age at marriage. As regards rural urban differentials, it is observed that the fertility for the former is slightly higher than that for the latter.

4. SOME SOCIAL ASPECTS OF FAMILY PLANNING

By

G. Prathapachandran Nayar,
Assistant Information Officer
Public Relations Department

The basic objective of our planned development is to provide the masses of the Indian people the opportunity to lead a better life. To reach this goal agricultural output has been stepped up, mighty multi river valley projects have been launched and gigantic industrial plants, like iron and steel have been commissioned. Our national income has doubled during the last decade; but the good effects of our planned development have been nullified by the present alarming rate of growth of population. It is in this context that we have launched the programme of family planning to check the enormous increase of population.

In the underdeveloped countries, the output must grow more rapidly than population and population must grow less rapidly than output. Along with economic measures to increase productivity, measures of health and hygiene to reduce morbidity and mortality are as equally necessary as family planning to reduce fertility. Our economic planning will have to run the risk of failure if, population planning does not become its integral part. Controlled fertility is a Sine-Qua-Non to prevent the huge additions to the existing population, from mopping up the slowly increasing production of our country. The much feared social resistence

to family planning is not actualised in India and family planning must spread in concentric circles from urban to rural areas.

Our urban population is placed on a comparatively higher status by virtue of their better living conditions. They are more enlightened and financially better than our rural people. Being educated, the urban people have better opportunity to fully realise the necessity of family planning for a richer and varied life. Moreover, industrialisation has, generally accompanied, as is the case in France and other industrialised countries by the wide spread adoption of the family planning habit.

This is not the case with our rural people who constitute eighty three per cent of our population. Our villages are the most undeveloped parts of our country. The chief characteristic of our village is the tendency to a rapid multiplication of population, unaccompanied by a corresponding increase in the other factors of production. It is this tendency for increase of population to absorb even the little increase of production that makes the people remain at or near the substance level portrayed in lurid colours by Malthus some 150 years ago.

If we want to create a socialistic pattern of society with equal opportunities to all we have to concentrate our immediate attention in the rural India. In fact the success of our planned development lies in the progress of our villages and the progress of villages in turn depends largely on the successful adoption of family planning. To seek remedies to this vital problem we have to go deep into the various aspects of our village life.

An overwhelming majority of our village people are illiterate. They lack the essentials of a better living condition. Though they are essentially agriculturists, ninety per cent of them own no land. They work hard from dawn to dusk and live in poverty and misery. Our rural people are quite ignorant of a varied richer life prevalent in urban community because the majority of them have no opportunity to

travel outside their villages. The financial and educational limitations make them stand far away from the coloured life of urban community. Ignorance of world outside tends them to accept the poverty and misery as divinely ordained.

Perhaps the only source of enjoyment for them is that of the enticements of sex. This results in the enormous increase in the birth rates in villages. Each new birth is considered a divine gift immutable by human effort. They consider that a child birth is a divine pleasure and man is only instrumental in the hands of God. To act against the will of God will result in divine displeasure and nobody would dare to do it. The age old socio-religious cultural ideoligies also have contributed to this way of thinking in the rural areas.

The result is alarming. The birth rate in our villages is so high that our production cannot cope with it. Long ago when there was not much of poverty and misery the increase in number of a family was considered a blessing since everyone's income would add to the domestic income. Burden on the pater families thus, would be lessened to such an extent. This view was prevalent not only in agricultural families but also in labour families. Now the view is changed. The unemployment, shortage of food resources and the resultant poverty have compelled them to change the view. Not all new additions to the family are considered a blessing now.

Another aspect of the uncontrolled increase in population is the accomplishment of medical progress. Medical progress, so far as it has been effectively utilised, has caused a considerable reduction in mortality while equally effective stages in the direction of a reduction in fertility have not been brought into effect. To the extent that the medical progress has preceded industrial progress by a considerable span of time and has resulted in formidable over population, industrial revolutions stand a losing chance against Malthusian counter-revolutions.

The basic structure of our society warrants some concrete methods to check the population.

"Since illiteracy is dominant in our rural areas especially among women, the idea of family planning by its intrinsic merit does not enter into their mind. They must be made aware that such an improvement is possible and in their own life-time. A better order of things in any realm of human endeavour, including a higher standard of living, presupposes a knowledge that such betterment can be attained by reasonable effort. To be aware of a station in life better than one's own, one must have either seen persons in better circumstances or be able to imagine what a fuller and more abundant life would be like. This sounds very simple ..... but in actual practice that is not so easy as it seems". (Dr. S. Chandrasekhar).

If we want to launch our programme effectively we have to dig out the century old superstitious belief and install the modern scientific outlook instead. The ultimate success of our endeavour depends very much on how we are capable of uprooting this superstition. The rural people must be made aware of the human problem confronting them as a blockade to a better life.

This needs wide spread education, education to enlighten them in the various aspect of their day-to-day life. Dissemination of the idea of family planning through printed words become ineffective because of illiteracy. It is obvious that books, pamphlets, newspaper articles, etc., are relatively of small use. There are only two ways open to us to propagate this idea, cinema and spoken world. Spoken word or field work is the best out of the two. The essential benefits of birth control and the resultant better life, guaranteed, must be made known to villagers by explaining the various aspects of family planning. Practical ways and means of achieving birth control should be explained to them, and help extended wherever it becomes essential.

This mode of propaganda necessitates trained personnel, sufficient number of village social workers has to be deputed for the work. They must be capable of persuading the people to appreciate the necessity of a planned parenthood. In addition to the

social workers at the base, camps should be organised so as to make the villagers trained in family planning.

Family planning camps are the best medium available for mass communication in this field. This helps to create trained personnel among themselves. Experts in the various aspects of family planning have to be brought to the camp to train the campers.

After having considered the various aspects of our village social life certain suggestions for the successful implementation of family planning in our State is given below.

(1) We must have certain concrete programmes of training young men and women for selfless and sincere work. Only through the work of such young men and women we would be able to achieve success in this field. They should be entrusted with the field work. A spirit of mission work should infuse them. At present though there are field workers, their work seems to be far from, satisfactory, being devoid of the spirit of the mission.

(2) Family planning camps have to be organised in almost all our villages and rural people must be compelled by persuasion to participate in camps to the maximum extent possible. National Extension Services, Voluntary organisations like B.S.S., Village Volunteer Force, etc., must be inspired to take initiative in organising camps and propagating the idea of family planning with the help of trained field workers and Gramsevaks.

(3) "We cannot throw on the Deity the responsibility for bringing unwanted children into the world and leaving them to the State to clothe, feed and support by outdoor relief. The morality of birth control depends on the motive. The good citizen wants to do his best for his children and his country. If he has reason to that his children are not likely to be healthy in mind or body or if it is plain that there is no longer room for large families in the class of the nation to which he belongs, it is his duty to act in accordance with that knowledge". (Dean Inge).

The field workers and all other social voluntary organisations entrusted with the work of promotion of family planning must educate the common masses with a view to create this kind of consciousness among the village people. It will help to create citizens befitting the democratic set up of our country who are conscious of the dangers besetting the society.

(4) Our present educational system is quite inadequate to foster up a national feeling among the future generation. We must try to impart them the social and economic evolution taking place around them. Curriculam must be changed to that extent. Moreover, the children studying in the high school classes should be given a basic knowledge of the vital importance of planned parenthood as a part of their study. A small text book or certain lessons on this aspect may serve the purpose.

(5) Another essential aspect to be mentioned here is the lack of sufficient experienced Doctors. We lack sufficient number of Doctors even to attend the enormous number of patients. Since our present subject also is equally important some how or other the problem of lack of Doctors have to be solved. In certain areas of our State, where there is a Primary Health Centre and effective field work, villagers rush for vasectomy operation. But the surgeons in these Primary Health Centres get no time to attend to them since patients in serious conditions draw their immediate attention. By appointing a specialist for two or three Primary Health Centres the Government can remedy this problem. People should not be allowed to return home unattended by Doctors.

5. FAMILY ORGANISATION IN KERALA THROUGH AGES AND ITS EFFECT ON FERTILITY

By

G. Surendranathan Nair,
Research Assistant
Bureau of Economics and Statistics,
Kerala.

Towards the beginning of the fourth century B.C. the whole of South India has been Hinduised and the three great Hindu Kingdoms of Chera (the canarese form of Kerala), Chola and Pandya had been established stretching as far south as Cape Comorin (1) Kerala has its traditions that find place in the Epics and the Puranas. The social institutions that are typical of communities in Kerala have been the subject of study by several eminent anthropologists. The ethnological heterogenity of its population and the practice of diverse religion confer a representative quality to this region towards the larger life of India. But the peculiar family organizations and the culturological changes that had taken place in the past hundreds of years, distinguish Kerala from the rest of India. An attempt has been made in this paper to find out a few social and cultural factors affecting fertility of women in different family organisation in Kerala.

Inhabitants.—The inhabitants of Kerala can be classified into two broad groups according to family organisations, viz., Patriarchal and Matriarchal families. Those who followed patriarchal system of family organisation (Numputhiris, Christians, Muslims and a few depressed castes) formed the first category. Those who followed a matriarchal system of family organisation (Kshatriyas, Nairs, Ezhavas and a few depressed castes) formed the second category. The depressed castes, (Kuravas, Parayas, Vetas etc.) are regarded as the representatives of the earliest inhabitants of Kerala. But there is a considerable difference of opinion regarding communities

(1) Butt's Ancient India Vol. I P. 25

which formed the higher strata of society. The first people to settle in Kerala who were admittedly immigrants were Namputhiris. K. P. Padmanabha Menon holds the view that Namputhiris must have entered Malabar not later than the first century A.D. and suggests that it might have been earlier (2). The Ezhavas were the next settlers. They are believed to have come from Ceylon. The Ezhavas could not have arrived before the first century A. D. (3). Christians and Jews came to Malabar in the first century A.D. The advent of Mohamadans dates from 8th century A.D. The theories regarding the time when and the region whence they came must be purely conjectural (4).

Family organisation through ages.

Sri K. P. Padmanabha Menon in the history of Kerala suggests that patriarchal system of family organization was the prevailing system in Kerala from an early time and the matriarchal system was a development of the later period. Sri Ilamkulam Kunjan Pillai also affirms this view. The special circumstances which led to the transition from patriarchy to matriarchy, he suggests are the war between Chera and Chola which continued for hundreds of years. (1000 A.D.— 1325 A.D.). Matriarchal joint family system was not known to Kerala before 1000 A.D. when the war began. This system found to exist in Kerala at the end of the war. By 1325 A.D. the system became fully developed in Kerala. A number of chieftains established their might over different parts of territory. Various principalities came into being. They were constantly at war with one another trying to subdue his neighbours and establish sovereignty over them. The constant war necessitated the utilization of all available man power for military duties. Men had to leave their homes and go to war whenever called

(2) K. P. Padmanabha Menon, History of Kerala Vol. I P. 76

(3) Malabar Manual Vol. I P. 79 (footnote)

(4) K. P. Padmanabha Menon, History of Kerala Vol. III P. 178

upon to do so. Many lost their lives in war. The wives could not remain in safety in the husbands home. They looked their maternal home for protection and substinance. Such was the condition till about the beginning of 18th century. A new type of family organization became a necessity. Matriarchal Joint families thrived under such circumstances. (Matriarchal Joint families are known as Tarawads in Kerala). The Tarawad was a corporate unit. The Senior male member on the mother's side would be the head of the Tarawad. The administrative mechanism of the Tarawad had become a forcible form of social organization. This system of family organization stood the test of time for many generations. The able bodied man of the family formed the military unit of the family. The multi-generational joint family complex household was a source of power, authority and wealth. As time went on the matriarchal joint family system showed signs of inefficiency. The Tarawad management became unnatural and inefficient. This hampered the individual progress of the members. The impact of the western civilization weakened the system. The traditional joint families consisting of the members belonging to different generations disintegrated to form one generational joint families which eventually passed on into still simpler types of family closely approaching the pattern prevailing in industrially advanced societies. Such changes in the family structure may be associated with the demographic characteristics of these families. By the end of 19th century a shift from the matriarchal to patriarchal line of family organization was a sociotal necessity. A series of legislations one after another (from 1925) gave the final blow to the matriarchal system of family organization which gave way to the patriarchal system of family organization once again.

By the dawn of 20th Century the faith in the matriarchal system was shaking, the orthodox convictions were loosening their grip and the spirit of cynicism was heralding its victory. No doubt here and there, there are instances of the people desparately clinging to the old values especially when they

are on the point of loosing them. They are more than the final fliker of a dying flame. Both patriarchal (Makkathayam) and Matriarchal (Marumakkathayam) family organizations have maintained a cultural pattern of their own. The cultural patterns become the behaviour traits of children, youth, and adults. The cultural complex of these two systems is the combination of cultural patterns which belong logically together. "The culture may be described as that complex whole which includes knowledge, belief art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society." (5)

Namputhiris custom and their family organization will serve to represent the patriarchal family organization while the Tarawad system truly represents the matriarchal family organization in Kerala. A few customs which have social and cultural significance are given below.

Early marriage.—The regid insistance of child marriage under penalty of forfeiture of caste in other parts of India was absolutely unknown among Namputhiris in Malabar. The custom in vogue in Malabar was in accordance with the ancient Hindu Law while that prevalent outside Kerala (child marriage) was a later innovation forced upon the people by necessity of time (6). But the Namputhiri Brahmins believed that the lack of a son to perform obsequies of father will give no salvation to the departed sole. (There is no heaven for a sonless man). Therefore early marriage was a common feature. With early marriage parents try to achieve at least some reproduction before they die. The custom of early marriage is thus motivated by the desire to have a son before they die. The non-Brahmins however do not believe in this custom to the same extent. The age at marriage was very low among Brahmins and in other patriarchal families.

---

(5) Edward Tylor, Primitive culture Murray London, 1891 P. 1

(6) K. P. Padmanabha Menon, History of Kerala Vol. I P. 72

Age at marriage (7)

Castes	*Partriarchal families*	*Castes*	*Tarawad system*
Brahmins	16.4 years	Nairs	18.9 years
Christians	17.1 „	Ezhavas	18.9 „
Muslims	18.3* „		

* There are a few muslims who followed matriarchal system of family organisation till recently.

Widow re-marriage.—Widow remarriage was not allowed among Brahmins. It was socially prevented. But among Christians and Muslims no such restrictions had been placed. However widow re-marriage was not a common practice. Because of the restrictions on widow re-marriage they lose some years of their fertility. According to an estimate made from the census data, the Indian families lose about 8 to 10 years of their reproductive life (from age 15-50) because of widowhood (8).

It was found in Travancore-Cochin that while ever married females had 6.6 children by the time they completed their reproductive period and attained the age of 45. Widowed women had an average of 5.5 children (9).

While cultural principles favoured early and universal marriages, re-marriage of widows was not socially accepted. They tend to pull fertility in the opposite direction.

Another important custom among Namputhiris was restriction of marriage of male members. Only the eldest son was allowed to marry from his own caste and all other junior members had to find their spouses from other lower castes. The children born to them have no legal claims on the family property of the Namputhiris. The sanction of hypergomous marriage under Tarawad system leads to the development of a culture complex of these two systems. This practice of Namputhiri Brahmins was motivated by economic considerations. In fact this custom protected the family property from subdivision and fragmentation.

(7) 1931 Census, Travancore

(8) Agarwala S. N. Men Age at Marriage and widowhood in India—a paper presented to the international population conference New York 1961

(9) Maternity data, 1951, Census Travancore-Cochin P. 20-25

Tarawad system.—Tarawad means a matriarchal joint family. This system of family organization was not conducive to high fertility (10). This system helped in minimising the frequency of coitus. With its regid rules of social behaviour before the elders, this system did not allow undue sex-freedom to the couples. The age at marriage of woman under Tarawad system was higher than the age at marriage of women under patriarchal family system in Kerala. A good number of women were seen in the Tarawads as unmarried. Widow re-marriage was allowed in this system. But this was not a common practice. Divorce was allowed and was not uncommon. The women under Tarawad was not economically dependent on her husband. Her children would be protected by the Tarawad no matter how many children she had.

Higher age at marriage in Kerala.

Associated with the growth of a girl the Tarawad had to conduct different types of ceremonies (Talikettu, Thiranthu Kalyanam, Sambandam and Pulikudy) Talikettu ceremony was to be conducted before the girl attained puberty. The prestige of the Tarawad was to be maintained in all these ceremonies. They should be in accordance with the traditional norms of the Tarawad. Talikettu was a compulsory ceremony which should be conducted before the girl attained the age of puberty. Hence the talityping of all the girls below the age of 12 would be conducted in one grand ceremony. No age was prescribed for Sambandam (actual marriage).' A girl would be given in marriage only to a person of the same caste or of superior caste having equal or higher social status. These ceremonies often drained the Tarawad treasury. Hence the marriage of a girl was likely to be postponed to a future date under the pretext of unsuitability of candidates or unequal social status or caste or rank. Some times, the Karnava, the head of the Tarawad may not be interested in the particular marriage alliance due to his ill-will towards the father or uncle of the bride or bride groom.

(10) Effects of marumakkathayam on the fertility pattern of Kerala Demographic Research Centre, Trivandrum (unpublished)

Higher age at marriage is closely associated with the socio-economic consideration of the Tarawad and most likely with the administrative mechanism of the Tarawad system.

The practice of polygamy and polyandry under Tarawad system and frequent divorce separation or desertion and the higher proportion of unmarried females have acted as social controls of fertility.

In the patriarchal family organization also early marriage of Namputhiri women (not child marriage) helps higher fertility. But the age at marriage was higher than the age at marriage prevalent among others in other parts of India. The impact of western civilization and the spread of Christianity and Islam had encouraged to shift the age at marriage a higher level.

Today the various social and cultural factors mentioned above are gradually loosing their hold. The age at marriage is tending to increase due to education of women. Widow remarriages are becoming more common. Moral restraints are not much observed. The multi generational Joint family system has been disintegrated into complex household and into Nuclear type of families. Joint family system is no more attractive. With increased Education, urbanization, economic prosperity etc.,, the social atmosphere is changing and there is lesser intensity of social pressure for a larger family size. The trend is towards nuclear family system which is yet to be achieved. The old values are being replaced by new social values and the Kerala is now experiencing a period of transition in the family organization and size.

PART V

Economic implications of the growth of Population of Kerala

87|1424

A Chairman's address.

DR. B. NATARAJAN, M.L.A. (Madras)
Formerly Economic Adviser to
the Government of Madras.

Ladies and Gentlemen,

I am grateful to the Demographic Research Centre of the Bureau of Economics and Statistics of Kerala for having invited me to participate in the Seminar. While the problem of population pressure is general to the country as a whole, to Kerala it is particularly urgent and basic too. In the course of my study of the State's economy in connection with the Techno-Economic Survey conducted by the National Council of Applied Economic Research, I had the occasion to go into the subject at length, and I came to the conclusion that Kerala needs a population policy distinct from the all-India approach, and all its own.

The rate of growth of population in Kerala, decade after decade, has been nearly double that of all-India. In another five or six years the State will have added 4 million to its man-power. Apart from this, the bottom-heavy structure of population as a result of unplanned procreation is a serious threat to all measures of planned economic development. The concentration of nearly 40 per cent of the population in the age group 0-15 brings about a heavy dependency ratio that can set at naught all measures of economic amelioratoion by known methods of resources utilization. The foodgrains availability, which to-day stands at 8 oz. per capita as against 16 oz. for all India, may further deteriorate. So will per capita income, which is Rs. 235 as against Rs. 279 for India (1961). The growth rate in the Second Plan has also been smaller in Kerala, 3.7 per cent against 4.2, all-India. The order of investment in that Plan has also been less, 7.6 per cent of the G.N.P. as against 11 per cent for all-India. The bulge in the age group 0-15 has resulted in a very

high figure of expenditure on Social Services in the Second Plan, 33 per cent of the total as against 19 per cent for all-India. A large population in a Small State is a drag to growth. Almost everything that is produced is consumed and there is very little of savings left for Capital formation.

No other State in India faces an unemployment problem of such severity as does Kerala. Open unemployment is 4.2 per cent of the working force as against less than one per cent in all-India, and underemployment, 9.6 per cent as against 6 per cent.

All this is perhaps familiar ground, but may not be so well known to demographers and development experts in the rest of the country. The problem is not one that can be solved by larger investments alone. There is a pronounced technological backwardness in the State's economy. Productivity in the secondary sector is lower than in the primary sector; and industry which is traditional in technology contributes but a small portion to the Stat's income. Workers are seemingly engaged in trade and other pursuits, but their productivity and output is negligible.

A triple approach to the problem is called for. A bigger development programme, a dynamic and immediate programme of population limitation, and migration these three should constitute the essential plans in a forward programme. A higher per capita investment is called for in Kerala on account of the special problem of the State. Even so, investment in family planning is not less important. Recent researches in regard to the comparative results of investment between income generating activities and investment in family limitation programmes have shown that an expenditure of about Rs. 600 per prevented birth would be a cheaper way to attain a given level of per capita consumption in India over the next two or three decades than a comparable investment in the development activities.

On this basis, Dr. P. S. Lokanathan concluded in a recent broadcast speech to the All India Radio that an annual investment from Rs. 8 to 10 crores on

family limitation programmes would not be too high. Emigration as a solution has, no doubt its limitations. There are cultural, linguistic, psychological and political barriers to emigration. Nevertheless, all avenues should be explored, and the setting of an Inter-State Migration Board would help in the finding of a solution. Indeed, along with these is the need to overhaul the education system of the State in favour of technologically oriented courses at the secondary level, as also the great task of achieving political stability as a prelude to the dawn of a healthier economic climate.

But these are not the problems which the State could hope to accomplish all by itself, and alone. The challenge of Kerala is a challenge for the entire India. It is in the interest of the rest of India equally to face it and wisely to contribute to the solution.

With these words, I wish the Seminar a success, and its delibrations an all-India hearing and attention.

B. TECHNICAL PAPERS PRESENTED

1. POPULATION GROWTH AND ECONOMIC DEVELOPMENT IN KERALA

by

P. G. K. PANICKER,
Reader in Economics
University of Kerala.

Population growth has almost invariably been a strategic variable in theories of economic development. With the possible exception of Adam Smith, population increase was an obsession with the classical economists: while economic progress promptly brought about increase in population, the latter in turn pressed hard against limited resources like land and quickened the operation of the law of diminishing returns. This would lead to rise in wages, fall in profit and slowing down the pace of accumulation and growth. Adam Smith, however, did not view the increase of population as an unmixed evil for it called forth not only diminishing returns from land, but also increasing returns to scale resulting from larger markets, and greater division of labour and specialization. However, the keynote of classical growth models was an explicit pessimism about the effects of rapid increase in population upon capital accumulation and economic growth.

Notwithstanding Hansen's prognosis of secular stagnation in mature economies chiefly emanating from cessation of population growth, the classical model, by and large, seems to be valid in the case of several underdeveloped countries in Asia. In these low-income communities, rise in income and standard of living is followed by increase in population, primarily resulting from substantial fall in mortality rates. Thus in India, the total population increased by about 203 millions in the course of the present century. The demographic pressure is mounting up and constitutes a heavy drag on the country's progress in future. The modest increases in national income are submerged under the high tide of population growth. Thus, while India's national income

registered an increase of 42 per cent in the first decade of planning, the rise in income per capita was only 16 per cent, or 1.6 per cent per year. During the first two years of the Third Five Year Plan, the gain in per capita income has been negligible, viz., only 0.38 per cent in 1961-62 and 0.14 per cent in 1962-63, although the national income increased at the rate of 2.59 and 2.37 per cent respectively.

Among all the States in the Indian Union, the pressure of population is most acute in Kerala. In 1961, Kerala's population reached 16.9 millions, yielding an average density of 1,127 per square mile, which is about three times the national average and the highest among all the States. The rate of increase during this century has been explosive; the State's population rose from 6.4 millions in 1901 to 16.9 millions in 1961 which works out to an increase of 164.28 per cent as against 85.89 per cent for the country as a whole for this period. Further, over the decades, the rate of increase itself has been steadily increasing. Thus, between 1931 and 1941, Kerala's population increased by 16.04 per cent, in the next decade it rose by 22.82 per cent and in the last inter-censal decade it went up by 24.76 per cent. The above differential in the growth rates of population in Kerala and the rest of India is partly reflected in the trends of per capita incomes in Kerala and India. While the national income per capita increased by 1.88 per cent on an average during the Second Five Year Plan period, the regional income per capita registered an annual increase of 0.48 per cent only. The economic implications of this demographic explosion we will next proceed to examine.

It is generally agreed that rapid growth of population in underdeveloped regions strengthens the forces of stagnation. Probably, the critical factor influencing the growth rate of the economy mostly affected by the rapid increase of population is capital formation. Thus the larger the population, *ceteris paribus*, the greater is the volume of investment needed to achieve a given level of per capita income. By the same token, the higher the rate of increase in population, other things being equal, the greater the volume of investment needed to achieve a given

increase in per capita income. To illustrate, assuming a capital output ratio of 4 : 1, an annual increase of 1 per cent in per capita income requires that 4 per cent of the national income is invested if population is stable, 8 per cent of the national income be invested if population increases at 1 per cent per annum, and 12 per cent of national income if population grows at the rate of 2 per cent, and so on.

With an outlay of Rs. 79 crores or so under the Second Plan of Kerala the regional income per capita has gone up from Rs. 234.4 in 1955-56 to Rs. 240 in 1960-61*; this works out to an increase of 2.4 per cent over the Plan period or 0.48 per cent per year. While the size of the third plan is more than double the outlay in the preceding Plan period, per capita regional income in Kerala is expected to increase from Rs. 307 in 1960-61 to Rs. 319 in 1965-66 (at 1960-61 prices); this amounts to a gain of 0.78 per cent per annum**. Thus, with rapidly swelling numbers, the magnitude of investment required even for making such modest improvement in per capita income tends to get bigger and bigger.

At the same time a rapid growth of population in an underdeveloped region like Kerala is apt to adversely affect the supply of investible resources. In the first place, if the actual population has exceeded the optimum—presumably, by all indications, it is so in Kerala—per capita real income is lower than what it would have been had the population been smaller, and therefore, actual savings are lower than potential savings. Secondly, a higher rate of population growth causes a diversion of investment resources into duplicating existing facilities like schools, hospitals and such other social overheads; and given the low level of income and saving in such communities, the diversion deprives the economy of scarce capital which would have increased the productivity of other factors to a greater extent. Thirdly, a rapid increase in population with a high birth rate implies an age-pyramid with a broad base.

* N. C. A. E. R., Techno-Economic Survey of Kerala, New Delhi, 1961. p18.

**Provisional Estimates

The high dependency ratio constitutes a serious drain on the savings of these communities.

The high rate of population growth in recent years tends to impose a heavy burden of dependency on the State's economy. According to the last census the age structure of the population in 1961 is as follows:

TABLE—I

Age Structure of Kerala's Population

Age group (years)	*Proportion of the Population*
0-4	15.8
5-9	13.4
10-14	11.8
15-19	10.3
20-54	40.8
55 & above	7.9
All	100.0

It can be seen that children below the age of 15 years constitute 41 per cent of the total population in Kerala. It implies that a substantial share of the State's resources has to be constantly employed in bringing up a large body of children who do not make any contribution to current output. For example, the expenditure on education accounts for the single largest share in Kerala's annual budget. In the current fiscal year, the budget provision for education is Rs. 23.68 crores out of the development expenditure of Rs. 49.33 crores and total expenditure of Rs. 69.79 crores. Obviously, it is only part of the story. The expenditure by parents on the education of their wards would come to sizable amount. The investments by private management on buildings and equipment must also be taken into account to complete the tally. All these add up to an impressive figure. To be sure, expenditure on education is a sound investment; it is human capital formation, so to say. But the point is that if the birth rates were lower, considerable savings could be diverted to building up physical capital that would greatly enhance the productivity of labour. Further more in the present state of the economy, this investment in human beings does not seem to yield commensurate returns. On the contrary, it helps to swell the ranks

of the so-called educated unemployed. The situation is similar to the waste of "demographic investment" in a community with high fertility and infant mortality rates. It may also be mentioned in passing that the educated unemployed have a higher propensity to consume and contribute more to social unrest and political instability in the State.

The rapid increase in population also aggravates the general employment situation. The annual addition to the labour force far exceeds the number of jobs created by investment under the Five Year Plans. Consequently, the backlog of unemployed at the end of each Plan tends to be larger and larger. Thus, the backlog of unemployed at the end of the Second Plan was 5 lakhs and that at the end of the current Plan is expected to be 7 lakhs if the employment target in the plan of 5.6 lakh jobs is achieved. Further, as a result of this mounting pressure of the jobless against slowly growing job opportunities, substantial numbers spill over into already overcrowded residual sectors like agriculture, trade and services, thereby distorting factor proportions and depressing the incomes in such activities. The phenominal expansion of the tertiary sector in Kerala vividly illustrates this point*.

The large proportion of children and unemployed adults to total population of the State imposes a heavy burden of dependency on its economy. The proportion of self-supporting persons is about 28 per cent of the population, while 67 per cent consists of non-earning dependents. This situation not only keeps down the level of current output,, but also fritters away substantial proportion of the potential savings in "unproductive consumption".

In summary, the rapid increase in the population of this State renders the problem of economic growth doubly difficult. On the one hand, the magnitude of investment needed to bring about any perceptible improvement in income per capita becomes greater. On the other hand, this demographic pressure keeps

*P. G. K. Panicker, The Tertiary Sector in Kerala, Labour and Industries Review January, 1964

down the level of income and savings as well as causes the dissipation of available savings in less productive directions.

2. INFLUENCE OF THE POPULATION OF KERALA ON ITS ECONOMIC DEVELOPMENT

by

K. NARAYANAN NAIR,
Research Officer, Bureau of Economics and Statistics, Trivandrum.

I. INTRODUCTION

Population is a vital factor of economic growth. Its *size* and rate of growth affect economic development to a very large extent. The per capita income of a country which measures the level of development attained, is the highest when the size of its population is the optimum. The optimum population is defined as the one which gives maximum per capita output under given techniques of production and supply of inputs. But in an economy the techniques of production and supply of inputs vary with time and the concept of optimum population has not much of practical use. It is, therefore, difficult to say whether a given population is larger or smaller than the optimum.* However, if in the case of a highly developed country conditions of production (techniques and supply of inputs) do not change very much, population may be taken as less than optimum if per capita output increases as population grows and greater than optimum if per capita output declines as population grows. In the case of underdeveloped countries, conditions of production (techniques and supply of inputs) change very rapidly with development and here optimum population has not much significance. What is relevant in such countries is a comparative study of the specific features of the population structure, viz., underemployment, proportion of earners in the total population, age distribution of population, high fertility, low mortality etc. Underemployment or disguised

* Coale and Hoover "Population growth and Economic Developmen in Low income Countries" Princeton University Press, Princeton 1958.

unemployment is said to prevail in an economy when a reduction in the number of workers does not affect production, techniques of production being kept constant. It generally occurs in the agricultural and services sectors. As in the case of optimum population, quantitative assessment of underemployment is also difficult. Another disquieting feature of the structure of population in the underdeveloped economies is that a high proportion of the total population is in the younger age groups. This results in a low proportion of population in the productive age group. The burden of dependency on the earners is, therefore, greater in underdeveloped countries which in turn leads to poor living conditions. In such economies which are mainly agrarian in character, manland ratio is of great significance in determining the level of living. Greater the density of population, other things remaining the same, the greater will be the poverty and misery. In such countries a smaller population (lower density of population) would help to create higher incomes and higher levels of investment. In fact many of the economic ills of the underdeveloped countries can be attributed to their immense size of population.

Economic development cannot take place unless the rate of growth of output exceeds the rate of growth of population. Higher rate of population growth necessitates higher rate of investment to achieve a given per capita output. In underdeveloped countries a large part of the increase in output is eaten away by the increase in population. The scope for increasing the rate of savings is, therefore, very limited and capital formation takes place at a very slow rate. This leads to a diminution in the capital employed per worker, thereby decreasing productivity and per capita income. In the case of developed countries a high rate of population growth poses a less serious problem. In fact in the case of some such countries, population growth acts as a stimulant to higher incomes and investment levels by providing additional demand for goods and services.

In the above paragraphs a review of the significance of population in relation to economic development has been made. The characteristics of the population of Kerala with special reference to the rate of growth will be examined in the light of the above review. The implications of the rapid growth of population in the State on the levels of investment, income, employment, food requirements etc. are discussed in perspective and in retrospective.

II. Growth of Population

The population of Kerala has been growing at an increasing rate in recent decades. The rate of growth rose from 12% in 1901-11 to 25% 1951-61. During the period 1911-21, there was a slight fall in the growth rate (from 12% in 1901-11 to 9% in 1911-21) on account of widespread influenza epidemic in the country in 1918-19. The rate of growth of population in Kerala is higher than that in India as a whole. During the period 1901-61 population has increased by 164% in Kerala as against an increase of 83% in all India. Also, the rate of growth during this period is higher in Kerala than in any other State in India excepting Assam. The present average annual rate of growth of population in Kerala is 2.5% as against 2.3 for all India.

The population of Kerala according to 1961 census is 169.04 lakhs. The present population is out of balance with the resources in the State especially land. The State accounts for 3.85% of the total population in India with only 1.27% of the land area of India. The density of population in the State according to 1961 census is 1127 per square mile as against 373 per square mile for all India. Compared to other States in India, the pressure of population on land is highest in Kerala. West Bengal is the only State in India which has a density of above 1000 persons per square mile.

One of the reasons for the rapid growth of population in the State is the phenomenal decrease in the death rates. Life expectancy[2] in Kerala which

2 R. S. Kurup—"The Rise in Life expectancy in Kerala" Working paper No. 13, Bureau of Economics and Statistics, Trivandrum 1963.

was 33.2 for males and 35.0 for females during 1931-40 increased to 39.9 and 42.3 respectively during 1941-50. There are evidences which show that life expectancy in Kerala is on the increase. For example the proportion of population in the highest age group (65 and above) in 1961 is higher than that in 1951. Compared to all India the life expectancy is higher in Kerala. This can be attributed to the higher standards of medical and public health facilities in the State. At the same time the birth rate is almost the same as in India as a whole and it has not undergone any significant change in recent decades.

III. Working Population

The proportion of workers in the total population is 33% in Kerala as against 43% for India as whole in 1961. This shows the higher burden of dependency on the workers in Kerala. The distribution of workers shows that in Kerala the percentage of workers in agriculture comes to 47 in 1961 as against 72 for all India. The precedents of the West suggest that as economic growth proceeds, the proportion of population dependent on agriculture declines. This may give the impression that Kerala is ahead of India in economic progress. But, this is not true. The per capita availability of land in the State is so low that agriculture cannot support more people than it does at present. There is considerable underemployment in the agricultural sector. The population reported as industrial is occupied mostly in cottage and small industries in which capital investment per worker and productivity are very low. Even those who are employed in the factory units are engaged in less productive agrobased industries like cashew, coir etc. The overall productivity of the industrial sector in the State is very low compared to all India. In 1960-61, the value of production per worker[3] was only Rs. 700 in Kerala as against Rs. 1200 for all India. The low productivity of the Industrial sector results in low surpluses for further

3 An Economic Review, Kerala 1963.

investment. The capital employed per worker[4] in factory units is only Rs. 2737 in Kerala as against Rs. 5,830 for all India. The above facts clearly reveal the industrial backwardness of Kerala in relation to India as a whole. The employment opportunities in the agricultural and industrial sectors being limited, the services sector is now subjected to heavy pressure of population. Of the total working population of 56 lakhs (1961) 19 lakhs (34%) are employed in the services sector. The corresponding figure for all India is only 16%. The occupational distribution of working population presented above clearly brings out the structural weakness of the economy. The lower per capita output in Kerala owes its origin to this phenomenon. In 1960-61, the per capita income[5] of Kerala was Rs. 283 as against Rs. 326 for all India.

IV. State Income[6]

During the Second Five Year Plan period, the total output of the State increased by 17% whereas the per capita output increased only by 5%. This difference is accounted for by the increase in population. If the population of 1955-56 had remained stationary, the per capita output in 1960-61 would have been higher by 12%. In 1960-61, the per capita income of Kerala was lower by Rs. 43 compared to all India. At the end of the Third Plan the same gap in the per capita income will be there if the present rate of growth of population continues. The effect of rapid growth of population on per capita income is clearly visible from the above.

V. Employment

The total number of employed persons according to 1961 census is 56 lakhs. The number of unemployed persons [7] is 7.6 lakhs in 1961 as against 6.3 lakhs in 1956. The difference of 1.3 lakhs is due to the excess of persons entering the labour force

4 Techno Economic Survey of Kerala (N. C. A. E. R.)

5 & 6 Estimates of State income of Kerala, Bureau of Economics and Statistics, Trivandrum

7 Unemployment Survey of the State, Director of Statistics, Trivandrum 1962

in spite of the employment opportunities provided during the plan period. If the population of 1955-56 had remained stationary the number of unemployed persons in 1960-61 would have been less. About 4 lakhs persons were given additional employment during 1956-61. There would then have been 2.3 lakhs unemployed persons in 1960-61, who by this time would have been given gainful employment. This was not possible because of the enormous growth of population. The number of unemployed persons at the end of the Third Plan is estimated to be about 7.73[8] lakhs. The new entrants to the labour force during the Fourth Plan period will be roughly 7.54[9] lakhs. Thus employment opportunities are to be created for 15.27 lakh persons during the Fourth Plan period to solve the unemployment problem. In the light of the achievement in the past, it appears that the problem can be solved completely only by the next two or three Plan periods. In the meantime there should not be any more rush into the labour force as is experienced at present. If there was no unemployment the per capita income in 1960-61 would have been 14% higher.

VI. Food Requirements

Among the food items consumed in Kerala rice is the most important. Other cereals form a very negligible part of the family budget. For a norm of 14 oz. per adult per day the total requirement of cereals works out to 18.2 lakh tons in 1955-56. The production during 1955-56 stood at 8.8 lakh tons meeting 48% of the requirements. In 1960-61 the requirement was 20.3 lakh tons as against the total production of 10.6 lakh tons. Thus nearly 52% of the requirement was met. The gap between the production and requirement was reduced by 4% during the period 1955-56 to 1960-61. The total increase in production during the same period was 20%. A major portion of the increase in production was only sufficient to meet the demand created by the increase in population. But for the rapid increase in population, there would have been a considerable reduction in the gap between production and requirement. If

8 & 9 Draft Plan frame, Kerala 1965-66 to 1970-71, Bureau of Economics and Statistics, Trivandrum

the population of 1955-56 had remained stationary, 58% of the requirement in 1960-61 would have been met by the production in the State. It becomes clear from the above that any attempt to bridge the gap between production and requirement will be successful only if strong measures are taken to curb the rapid growth of population in the State.

VII. INVESTMENT

The high rate of growth of population in the State demands higher levels of investment in social overheads like education, health, etc. In an economy which is deficient in capital this would lead to lesser investments in productive sectors. Definite information on capital formation in the State is not available. A very rough estimate[10] prepared on the basis of the scanty information available shows that an amount of Rs. 190 crores (at 1960-61 prices) was invested during the Second Plan period. Out of this total investment, 33% was in the social services sector. In India as a whole, the investment[11] in the social services sector forms only 19% of the total investment. This shows that the proportion of investment in the productive sectors is lower in Kerala compared to all India. This is one of the reasons for the low per capita income in the State. Another reason is the low rate of annual investment in the State. In 1960-61, the investment as percentage to State Income works out to 8 for Kerala. The corresponding all India rate of investment[12] is 11% approximately. If the growth of population in the State had been smaller, there would have been higher surpluses for investment and higher levels of per capita output. In other words the pace of economic development would have been higher than what it was.

---

10 The investment in the agricultural sector is mainly based on the increase in net area under crops and the average cost of bringing an acre of land under cultivation upto the bearing stage. The estimates for other sectors are based on the increase in the number of workers and capital co-efficient of employment available in different publications. In the case of housing sector the estimate is obtained as a product of the increase in the number of houses and the average cost for building & house. Details of other investments in the social services sector are collected from plan reports and budget documents.

11 & 12 "Third Five Year Plan" Government of India, Planning Commission.

VIII. Summary and Recommendations

In the foregoing paragraphs, the influence of population on investment, income, employment and food requirement in the context of Kerala economy has been discussed. The virtues of keeping the population stationary have also been pointed out. The rapid growth of population is found to affect adversely the economic development of the State. Industrial development is not adequate and unemployment is large. The standard of health services is high and trends in mortality and fertility are unfavourable to check population growth.

If the present trend of population growth continues, the population will be 187.07 lakhs in 1965-66 and 208.94 lakhs in 70-71. This means the social and economic evils existing in the economy will be further aggravated during the Fourth and subsequent plan periods. In view of the advances in the medical field it is likely that the death rate will continue to fall considerably in future. Therefore, unless birth rate is controlled population will grow at a faster rate than what it is today. A rough idea of the magnitude of the problem can be had from the volume of investment that is required in the Fourth Plan to raise the State income to a desired level. According to a tentative Plan worked out in the State Bureau of Economics and Statistics it has been found that an investment (including current outlay) of the order of Rs. 1,200 crores, will raise the per capita income of the State to the all India level at the end of the IV Plan period. In view of the low rate of savings in the State, this target of investment can be achieved only through substantial central assistance. If the domestic resources in the State alone are considered, it seems not likely that the State will reach the level of development attained in the rest of India in the near future.

In order to find a solution to the problem, a population policy to reduce the rate of growth of population in the State should be an integral part of planning in Kerala. Emigration to the less dense regions in India is not considered here as a solution

to the problem as it is only a temporary remedy. There should be a planned effort to reduce the growth of population while improving the techniques of production, especially in the field of industry. At the same time there should be a shift of population from agricultural and services sectors to the industrial sector. In other words the proportion of investment in the industrial sector should be significantly higher than what it is at present. This will help to remove the structural weakness of the economy which in turn will lead to higher levels of per capita income and investment, thereby quickening the pace of economic development in the State.

3. GROWTH OF POPULATION AND ECONOMIC DEVELOPMENT IN KERALA

by

B. R. KOHLI,
Statistician, Family Planning Institute,
New Delhi.

Census of population is the main source of study of population trends, growth rate, age and sex composition, educational levels, occupational structure, etc. In addition to the census, National Sample Survey and limited number of demographic studies conducted in the State also throw light on the various demographic and socio-economic characteristics of the population.

The population problem constitutes the most fundamental of all human problems in the context of economic growth. Kerala like the rest of the Indian States is suffering from population explosion. Starting with a population of 6.34 million in 1901, it has reached a figure of 16.90 million in 1961. Its population rose by 24.76 per cent over the decade 1951-61 as against the rise in all India population of 21.50 per cent. Kerala is among the first six States having high rates of population growth.

Table 1 shows the rate of growth of population in Kerala as compared to All India over the period 1901 to 1961*.

*Government of Kerala, An Economic Review, 1962.

TABLE—1

Year	India		Kerala	
	Population (Millions)	Decennial percentage variation	Population (Millions)	Decennial percentage variation
1901	236.28	..	6.34	..
1911	252.12	5.73	7.12	12.33
1921	251.35	0.31	7.81	0.97
1931	279.02	11.01	9.51	21.76
1941	318.70	14.22	11.03	15.98
1951	361.13	13.31	13.55	22.84
1961	439.24	21.50	16.90	24.76

From this table it will be observed that during 1901-1961 population has increased to about 165 per cent in Kerala as against the all India increase of only 86 per cent. During this period the overall increase is higher in Kerala than in all other States except Assam. During the period 1901 to 1921 it had exhibited a net growth of 23.19 per cent as against a growth of 5.35 per cent for all India. During 1921-41 when the population for the country as a whole increased by 26.79 per cent, the State showed an increase of 41.23 per cent. The next two decades showed a phenomenal increase 53.22 per cent in Kerala as against 36.37 per cent for India as a whole. This increase in the population has created a new record in the State Demographic History. The sharp rise in the population can mainly be attributed to the ever increasing disparity between the rates of fertility and mortality. A sharp decline in mortality has not been followed by any significant change in the level of fertility.

The State accounts for only 1.2 per cent of the land area in India but her population is 3.8 per cent of the Indian population. The population density rose from 903 per sq. mile in 1951 to 1127 in 1961. The State has the highest population density in India and one of the highest in the whole world. For India the density of population is only 373 per sq. mile. Kerala ranks fifteen among the Indian States in respect of land area but she stands thirteen in regard to population.

Sex Ratio.

The sex ratio for the State is 1022 females for every 1000 males, the highest sex ratio being observed in Trichur (1090) and the lowest in Kottayam (963). The corresponding figure for India as a whole is 941 females per 1000 males. The census reports for the period 1901-61 reveal that the female population in Kerala was higher than that of males throughout the period. The higher sex ratio in Kerala may be attributed to large volume of migration of men, that has taken place from the State to the rest of India.

Mortality trends.

The available data indicates that the death rate in the State has decreased during the period 1941-61. The fall in death rate is steeper in these years on account of health programmes in the successive five year plans. With the improvement in health facilities the mortality rate in the State has fallen appreciably. Table No. 2 shows the registered death rates per thousand population in Kerala*.

TABLE—2

Reference year	*Death rate*
1930	9.7
1940	10.9
1950	9.4
1956	7.4
1957	9.6
1958	7.6
1959	7.4

Though the figures set out in this table are not very accurate, they are helpful in establishing general trend of the mortality prevailing in this State. According to the Census Actuary, Kerala has shown a death rate of 16.1 as compared to all India of 22.8 during 1951-60. This is the lowest among all the States.

Fertility trends.

While the various large scale developments in health and economic schemes of the State Government are resulting in a welcome decline in the death rate, there does not seem to be any appreciable

*Government of Kerala, An Economic Review 1962

change in the birth rate. On the other hand registered data shows that it is on the increase. It is true that the State Government has committed to the policy of controlling the growth of population and has been promoting family planning since the inception of the programme. But the results by way of reduction in the birth rate have not been commensurate with the State efforts.

The birth rate in Kerala is 38.9 according to Census Actuary as against All India figure of 41.7. The figures given by the Census Actuary prove that at All India level, there is a clear trend indicating fall in death rate accompanied by more or less steady birth rate. Table No. 3 shows the registered birth rate for the period 1930-1959. This data reveal that birth rate is increasing. The gross reproduction rate and average number of children per woman in Kerala State are 2.49 and 5.10 as compared to 2.70 and 5.53 for All India during the period 1951-1961[5].

TABLE—3*

Reference year	*Birth rate*
1930	17.0
1940	19.7
1950	20.3
1956	23.0
1957	23.8
1958	24.6
1959	25.0

Though the birth rate provides a measure of trend in the general population growth, but to go into its details to have a closer view, we must take into account the specific fertility rates which are subjected to deep variations in different age groups. Unfortunately, no regular data was available till recently, except few localized studies. In conformity with certain demographic studies, the data reveals that the age at marriage need rise considerably before fertility rates are appreciably affected.

According to the study based on the sample census and fertility survey conducted by the Registrar General the number of women per hundred married in the different ages below 18, 18 to 22 and 23 and

*Government of Kerala, An Economic Review 1962

over, it will be observed that in Kerala about 53 per cent of the women married below age 18. This is in contrast to the age at marriage in other States of India where about 70 to 90 per cent marry below age 18.[3]

Migration.

The trend of population growth is determined by birth rate and death rate, migration is almost negligible but due to increased industrialisation, propogation of education, improvement in means of communication and rapid growth of population have resulted in considerable internal migration from villages to towns. Such internal migration play an important role in the distribution and intensity of population as well as in rural and urban problems. Pressure of population on land has also played an important part in the State in pushing out large population from rural areas to the towns and cities and also to other States in search of better employment opportunities. On the eve of 1961 census, it was considered desirable to apply a few uniform tests throughout the country for defining places which would be considered as towns. This was necessary to fix the number of places which could be regarded as possessing urban characteristics as distinct from swollen villages and secondly to start a baseline to determine growth of urban population in future particularly in the context of five year plans. The application of this test eliminates a number of places from 1951 list of towns with population of less than 20000. In Kerala State the urban areas in 1951 which were 94 with population of 1.83 million were reduced to 57 with a population of 1.59 million after deleting spurious towns during the same period. The percentage increase in urban population during 1951-61 also shot up from 39.9 per cent to 61.1 per cent after deletion of spurious towns in 1951. The corresponding figures for all India were 26.3 and 30.9 per cent. The total urban population in the State during 1961 was about 2.6 million. In terms of percentage it works out to 15.1. The total percentage increase of 61.1 in urban population during 1951-61 comprises of 30.20 per cent due to emergence of new towns and 30.9 per cent due to increase in the population of old towns.[11]

Age Structure.

The age composition in the State has not shown any great change in the last few decades. As a consequence of high fertility, Kerala has extremely young population. There is heavy concentration in the age group 0 to 15 (nearly 40 per cent of the population in this group) is indicative of unplanned procreation.[1] A population policy should aim at reducing this 'bottom heavy' age structure.

Expectation of life.

Data on expectation of life reveals an improvement in mortality after 1931. The average expectation of life at birth was estimated at 26.91 for males and 26.56 for females in 1931. The figures for 1951 of India were 31.45 and 31.66 for males and females respectively, the corresponding figures for Kerala State were 39.89 and 42.34[1]. The expectation of life at birth according to Census Actuary is 48.3 as against 41.2 for All India[5]. This is the highest as compared with other States in India. Kerala's position is the best in regard to expectation of life in view of much better health standard obtaining in the State.

Marital Status.

According to National Sample Survey report No. 76 based on 14th round data, about 53.51 per cent are single in Kerala State where the all India figure is only 41.42 per cent. The percentage of married is 39. This is the same for both the sexes. The table 4 shows the distribution of population by marital status.

TABLE—4

Percentage distribution of population according to Marital Status

	Male	*Female*	*Total*
Single	58.29 (50.51)	49.03 (38.10)	53.51 (41.42)
Married	39.08 (44.68)	38.93 (48.85)	39.00 (46.73)
Widowed	1.94 (4.25)	9.56 (12.38)	5.87 (8.23)
Divorced	0.39 (0.26)	1.91 (0.28)	1.18 (0.27)
Separated	0.30 (0.30)	0.57 (0.39)	0.44 (0.35)
	100.00	100.00	100.00

Figures in brackets indicate the all India percentages.

Rural-Urban Population Projections[9].

The importance of future estimates of population in the context of planning needs hardly to be exaggerated. For studying trends in urbanization, labour force, mortality trends, food requirements, population in the school going age groups, we normally require rural-urban population projections at the end of each five year. As is well known, urban population in a State would change due to (a) emergence of new towns (b) slide-back of certain existing towns into villages (c) change in population of existing towns. Since there is a-priori reason to believe in the existence of marked rural-urban differentials in the economy, it is essential as a first step to have the rural-urban break-up of the total population in the State. While estimating the rural-urban pattern, it has been assumed that the change in the proportion of urban vis-a-vis total population during the current decade would be similar to that experienced during the fifties i.e. 1951-61. Due care has been taken to exclude the spurious towns which had been classified as urban in 1951 but have been de-classified as urban areas on the basis of a following set of criteria for determining the urban nature of a place adopted in 1961 Census:

(a) Population density of not less than 1000 per sq. mile;

(b) A population of at least 5000;

(c) Three fourths of occupations of the working population should be outside of Agriculture; and

(d) The place should have, according to the Superintendent of the State, few pronounced urban characteristics.

Table 5 sets out the rural-urban population projections of the State by two methods viz. Modified Geometric Method and by fitting a linear trend through one tenth of the mean decennial growth rates during 1941-51 and 1951-61. It will be observed that the two sets of estimates are almost identical —the estimates by modified geometric method are a little on the higher side.

TABLE—5

Rural-Urban Population projections in Kerala State for 1961, 1966 and 1971 (In Millions as on March 1st of the year)

Year	*Total*	*Urban*	*Rural*
1961 (Census)	16.90	2.55	14.34
1966	18.87	3.17	15.70
	(18.85)	(3.17)	(15.68)
1971	21.09	3.90	17.19
	(20.93)	(3.87)	(17.06)

Figures in brackets indicate the lowest estimates of population arrived at by fitting a linear trend method.

It will be observed from this table that the population of the State will touch from 16.90 million in 1961 to 21.09 million in 1971—an increase of about 4 million. This will have widespread repercussions on the State's economy.

Impact of population on the State's economy.

If this rapid population growth is allowed to persist, it is feared that time is not far off when we have to face an 'explosive situation'. In Kerala, population of 16.9 million in 1961 census is estimated to go up to 21.1 million in 1971. This increase of 4 million population during a decade will have wide spread repercussions on the social and economic policies of the State. For example:

(i) Too rapid increase in population retards economic development. It can increase the pressure of population on land which is already limited and so retards increase in productivity. Especially in Kerala, pressure on land is most alarming. Unless it is possible to produce more on the Kerala's limited land and also to bring about rapid industrialisation, it is most difficult for Kerala to advance economically.

(ii) There will be continued increase in the unproductive population for a prolonged period resulting in infructuous cumulative expenditure on public health services, primary education, maternity and child care and so on.

(iii) As regards unemployment and under employment, Kerala's position is most disappointing, due to very high rate of growth of population. Every

year, about 1.8 lakhs of persons are added to the existing surplus of labour force in the State.

(iv) Kerala has the lowest per capita availability of foodgrains per day (8.2 ozs.) The addition of 4 lakhs population per year will further aggravate the position in regard to the foodgrains availability. According to the Planning Commission "If a consumption expenditure of Rs. 20 per capita is assumed to be least tolerable minimum, then 50 per cent of the country's population is at present living below subsistence level. The balanced diet recommended by Nutrition Advisory Committee together with related consumption would cost Rs. 35 per month per capita. But only 20 per cent of the population can afford this today". In Kerala the position is still worse due to her backwardness in agriculture and industry.

(v) The per capita income in Kerala is one of the lowest. Further addition to the population without advancement in the economic field will further affect the per capita income.

Foodgrain requirements.

There has been a sharp increase in the population of Kerala as revealed by the 1961 census. On the basis of the 1961 census, it is possible to peep into the future of population growth in the State for estimating the future demand of foodgrains. Reliable estimates of foodgrains requirements are needed for various purposes such as import and export policies price support and inter-State grain movements[5]. Here an attempt is made to estimate the foodgrain requirements of the State at the end of the Third and Fourth Five Year Plan periods.

Demand for Foodgrains.

The total demand for foodgrains has three components as given below:

$D = Dc + Dm + S$

Where Dc = Demand for human consumption

Dm = Demand for seeds, waste and feed of animals

S = Surplus for export and for building buffer stocks.

Foodgrain requirements for human consumption[10].

For estimating the requirements of foodgrains for human consumption, the total population is first converted into adult male units in order to eliminate variations in the consumption levels of different age and sex groups of the population. These units are worked out by assigning the following scale of co-efficients.

TABLE—6

	Co-efficient
Adult Male (age 15 and above)	1.0
Adult Female (age 15 and above)	0.9
Children (below age 15)	0.8

After assigning the above weights to the population, the State projections of the adult male units at the end of Second, Third and Fourth Plan periods are worked out as shown in Table 7.

TABLE—7

Adult Male units equivalent to the estimated population—1960-61 1965-66 and 1970-71

Year	*(in millions)* *Adult Male Units in Kerala*
1960-61	15.03
1965-66	16.74
1970-71	18.78

Demand for foodgrains for uses other than human consumption.

For assessing the total demand for foodgrains, the requirements for seed, animal feed and wastage will also have to be taken into account. It has been officially estimated that the demand for non human consumption would be about 14.3, per cent of the demand for human consumption. Table No. 8 gives the total demand for foodgrains for human consumption as well as for non human consumption at the end of Third and Fourth Plan periods[10].

TABLE—8

Estimate of total demand for foodgrains for 1965-66 and 1970-71

Year	*For Human Consumption*	*For Non-human Consumption*	*(In Million tons)* *Total*
1965-66	3.24	0.46	3.70
1970-71	3.63	0.52	4.15

Here the demand for foodgrains has been worked out by the 'Normative' approach. In this approach, the daily caloric and nutritional requirements based on normal balanced diet for 'Reference Man' are fixed and then applied to the adult male units. Here the statistical approach (which is based on the growth of population, per capita income and the corresponding income elasticity) has not been used for working out the requirements of foodgrains due to the paucity of reliable data.

Per capita availability of foodgrains[10].

The per capita availability of foodgrains per day in Kerala works out to 8.2 ozs. in 1960-61 which is the lowest among all the States of Indian Union. The All India per capita availability works out to 16.2 ozs. Table 9 sets out the per capita availability of foodgrains in the State during 1960-61.

TABLE—9

Production Gross (000' tons)	1091
Production Net (000' tons)	955
Import (+) or Export (—) (000' tons)	447
Change in Govt. Stock (000' tons)	23
Net availability for Human Consumption (000' tons)	1425
Estimated population as on 1st July, 1961 (in million)	17.03
Per capita availability of food grains per day (In ozs.)	8.2

It will be observed that a wide gap exists between the actual availability of foodgrains and the actual requirements. In order to meet fully the foodgrains requirements, the State has to double her efforts for agriculture production.

Employment situation.

Statistics on labour force are indispensable for purposes of formulation of employment policy, particularly so in a planning era when the State wants to utilize its labour force to the maximum advantage of the community. Here the labour force is defined as the employed and those seeking for employment. For estimating the labour force projections, the first prerequisite is to have a reliable set of estimates of population. After obtaining

the population projections, the labour force participation rates are utilized to obtain labour force projections. The estimates of labour force projections for Kerala State for 1961, 1966 and 1971 are given below:

Year	*Estimates of labour force (in million)*
1961	5.34
1966	5.97
1971	6.72

As regards unemployment, Kerala's position is most disgusting. Even West Bengal which has one of the highest growth rate in population in India has only lesser percentage of unemployment than Kerala. Every year about 1.8 lakhs of persons are added to the existing surplus of labour force in the State[1].

The Agriculture sector is being subjected to heavy pressure and so also the services sector. The inevitable result of all this is the higher dependency on wage earners by unproductive dependents[1].

In order to utilize to the fullest extent possible the manpower resources of the State, the Five Year Plans have provided a number of employment opportunities but these do not seem to be adequate enough even to absorb the annual addition to the labour force. Recent surveys conducted by the State Statistics department during January-February 1962 show that in Kerala there are 7.60 lakhs of unemployed persons.

The Employment services are being provided by the Employment Exchanges in the State. These Exchanges serve as an important indicator of the present employment situation. The number of employment seekers per employment exchange works out to 16,830 in Kerala as aginst 5,427 in all India. The intensity of unemployment is the highest among all the States of Indian Union.[1]

Economically active population.

Census data not only throws light on social and cultural pattern of the society, but also on the economic characteristics of the population. According to

[1]A.I.C.C. Economic Review February 7, 1962 pages 19-22

the 1961 Census, the number of workers in Kerala State is 5,630,333 and the non workers 11,273,382. The distribution of workers[2] in different industrial classifications is presented in Table[10]. The percentage of workers in the total population is 33 as against 43 for India as a whole in 1961.

TABLE—10

Distribution of workers in different Industrial classifications

	No.	*Percentage*
Cultivators	1,178,103	20.92
Agricultural labourer	978,396	17.38
In mining, Quarrying, Live-stock, Forestry, Fishing, Hunting and Plantations Orchards and Allied activities	487,359	8.66
House-hold industry	488,562	8.68
Manufacturer	529,472	9.40
Construction	70,702	1.26
Trade and Commerce	321,933	5.72
Transport, Storage and Communication	152,513	2.71
Other Services	1,423,293	25.27
Total workers	5,630,333	100.00

From the above table it will be observed that agriculture absorbs 47% of the workers as against 72% for all India. It may be recalled that the concepts and definitions of the working population adopted have varied from Census to Census and as a Consequence, Comparability has been vitiated. In the 1961 census also, new concepts and definitions of working population were used.

State income.

Kerala's State income at current prices and constant prices for 1960-61 were Rs. 52,754.7 lakhs and 44,422.6 lakhs respectively. The National income at 1960-61 prices was Rs. 1,450,000 lakhs. The per capita income for Kerala during this period was only Rs. 312 at current prices where as the all India figure was Rs. 330. At constant prices, the per capita income for the State was Rs. 235 in 1960-61 as against the all India figure of Rs. 279[1]. The Sector-wise Kerala's State Income is presented in Table 11.

TABLE—11

State Income of Kerala during 1960-61 (Rs. in lakhs)

	Sector	*Current price*	*Constant price*
1.	Agricultural	21,600.5	16,438.9
2.	Animal Husbandry	1,781.6	1,875.4
3.	Forestry	1,148.9	1,001.5
4.	Fishery	2,061.6	1,721.0
5.	Mining	292.8	2,73.9
6.	Factory Establishments	3,109.8	2,949.6
7.	Small Enterprises	5,067.6	4,806.5
8.	Construction	399.3	342.3
9.	Banks and Insurance	300.2	272.4
10.	Communication	290.2	262.3
11.	Railway	381.0	260.4
12.	Other Commerce & Transport	6,416.8	5,884.3
13.	Profession, Liberal Art, and domestic service	6,055.6	5,030.3
14.	Public Authority	2,734.2	2,461.1
15.	House Property	1,114.6	842.7
	Hence Rupee	52,754.7	44,422.6

Source: Quarterly Bulletin of Statistics, Government of Kerala, December, 1962.

The slight set back in agricultural and industrial production has been reflected in the State's income growth. Although full data for 1962 are not yet available, it can be safely inferred that there will be no significant increase in the regional income for the year. The average increase over the Second Plan is 3.7 percent while the all India increase is 4.2 per cent[1]. Due to pressure of population, the per capita income gets reduced very much. Though the State income increased by 48% during 1955-56 and 1960-61, the per capita income increased by only 32% during the same period. In order to have a promising per capita income, the State has to advance considerably in Agriculture and industrial production as well as to have a vigorous population control policy.

Family Planning.

Realising the gravity of the over population on the State's economy, family planning was made an integral part of the State Five Year Plans. The Planning Commission has also stated that the objective of stabilising the growth of population over a reasonable period must the "at the" very centre of planned development. At present, the fruits of

planning, are being disipated by the alarming growth of population. The birth rate which has not shown an appreciable decline in all these years has to be tackled effectively for the control of population. The importance of family planning is generally realised and there is not much of an organized opposition to it. As this programme has not reached its roots, the Central Government have reorganised the entire family planning programme and have shifted from the clinic approach to the non-clinic approach. This approach needs the application of community education, techniques found effective in other development programmes. The main goal of the family planning programme is to reduce the birth rate by about one half in as short period as possible[3]. The solution of all economic evils, lies in tackling this problem effectively. Reduction in birth rate may be effected by sterilization or induced abortion or both. It cannot be done through the conventional methods of contraceptive. Due to social customs, low level of literacy, income etc. resort to abortion except on medical grounds for the solution of this problem may be ruled out. Therefore, emphasis will have to placed on sterilization, in addition to the use of the various other contraceptives. The crux of the problem consists not in organising the technical services needed for sterilization, but in organising a vigorous campaign of education and motivation[4].

Progress in Family Planning.

The number of family planning clinics opened upto March, 1964 is 354. In the rural areas the number of clinics opened are 343 whereas in the urban areas, the number of clinics are 11. The progress regarding sterilization operations in the State is presented in Table 12.

TABLE—12 *

Number of sterilisation operations conducted during 1957-64

Year	*Male*	*Female*	*Total*
(1)	(2)	(3)	(4)
1957	321	158	479
1958	1,633	1,507	3,140
1959	4,832	2,236	6,368

* D.G.H.S. (Family Planning Section), Government of India.

1	2	3	4
1960	3,079	1,953	5,032
1961	3,578	2,939	6,517
1962	4,182	2,916	7,098
1963	10,395	2,830	13,225
1964 (Upto April)	2,888	1,053	3,941
Total	29,908	15,592	45,500

Form this table, it will be observed that the number of sterilization operation are steadily increasing since 1960. Further it will be seen that the number of vasectomies performed is larger compared to the number of salpingectomies.

As compared to other advanced States like Madras and Maharashtra, Kerala has not made much headway in this programme. In order to have an impact on the birth rate in the State, the efforts of the State Government will have to be intensified.

References

1. Government of Kerala — An Economic Review 1962
2. Registrar General of India — Census of India—Paper No. I
3. Do. — Vital Statistics 1960
4. Institute of Applied Man Power Research, New Delhi — Planned Development and Population Growth
5. Registrar General of India — 1961 Census Life Tables 1951-60.
6. Directorate General of Health Services, New Delhi — Family Planning Programme 1962-63
7. Kohli B. R. — Fertility control in India—Family Planning News January & February 1964.
8. Do. — Population Growth & Demand for Foodgrains in Punjab 1961-71—Agriculture Situation in India July 1961.
9. Do. — Future Growth of population in State of Indian Union—Family Planning News May 1963
10. Do. — Estimates of Demand for Foodgrains in India at the end of 3rd and 4th Five Year Plans—State-wise Analysis (Mimeographed)
11. Do. — Growth of Urban Population in India during 1951-61 (Mimeographed)
12. Govt. of Kerala — Third Plan of Kerala.

4. SOME AGRO-ECONOMIC IMPLICATIONS OF GROWTH AND STRUCTURE OF RURAL POPULATION OF KERALA

by

P. S. SHARMA*
Office of the Registrar General, India.

The total population of Kerala on the basis of 1961 census has shown an increase of 24.76% during the last decade as against an increase of 52.75% in total population of cultivating households in rural areas. The male workers engaged in cultivation (Industrial Category I) showed an increase of about 16% while the male workers engaged as agricultural labourers (Industrial Category II) showed a decrease of 27% and the male workers engaged in plantation etc. (Industrial Category III) recorded an increase of 89% during the last decade.

TABLE—1

Percentage increase in cultivating population and total population in 1961 over 1951

Districts	*% increase in cultivating population (cultivating households only) over the decade* 1951-61 *(Rural areas only)*	*% variation in the total population during* 1951-61
Malabar	30.42	23.34
Trichur	54.06	20.98
Kottayam	31.48	30.52
Quilon	69.81	25.28
Trivandrum	109.40	31.38
State (total)	52.75	24.76

It is observed from table 1 that the rate of growth in cultivating population has been roughly of a higher order compared to the increase of general population in Kerala. The variation in the rate of increase of cultivating population (rural) and total population is of a marked order in the district of Trivandrum, Quilon and Trichur. In other words, the rate of growth of the non-cultivating households

* Personal views alone are given here. The author is grateful to Shri A. Mitra, Census Commissioner, India for kindly going through the draft and for making valuable suggestions. Thanks are also due to Sarvshri D. S. Mehra, R. K. Bhatia, R. P. Bhatnagar for valuable assistance.

has been relatively of a lower order. This assertion has, however, to be examined in the light of further data available.

The proportion of male workers engaged in non-plantation cultivation has varied from 15% in Trichur to 30 per cent in Trivandrum during 1951-61. Kottayam has, of course been an exception showing as it does a fall in the cultivating male workers. The male agricultural labourers have shown decreases in all the districts during 1951-61 and the decrease has been of a marked order in Trichur. It has to be examined as to how far the decrease particularly among the male agricultural labourers engaged in non-plantation cultivation has been due to a shift towards plantation cultivation. These statistics are presented in table 2 which shows that the male workers engaged in plantation etc. have shown increase of more than 100% in the districts of Malabar and Kottayam, Quilon and Trichur have shown increases of 58 and 67% repectively.

TABLE—2

Percentage variation in male workers engaged in non-plantation cultivation, as agricultural labourers and in plantation etc., in 1961 over 1951

	Districts	*% increase in male workers*		
		I	*II*	*III*
1.	Malabar	21.00	(—) 13.25	113.45
2.	Trichur	15.33	(—) 55.32	66.80
3.	Kottayam	(—) 12.08	(—) 32.93	131.89
4.	Quilon	19.37	(—) 20.06	58.13
5.	Trivandrum	29.46	(—) 16.28	28.17
	Total	15.58	(—) 27.21	88.60

The districts of Malabar and Kottayam which have shown more than 100% increase in the employment of male workers in plantation etc. during 1951-61 also account for quite a sizeable proportion of total area under various plantation crops like coconut, tea, coffee, rubber as also garden crops as will be evident from table 3. Among plantations, coconut and cashewnut crops occupy a place of preeminance in various districts of Kerala as will be seen from the absolute acreage figures of Kottayam, Quilon and Kozhikode. Coconut is recognised as

one of the most important flora of the State and one of the chief money crops. In 1958-59, the total value of coconut and allied products exported from the State came to Rs. 2217 lakhs and was only second to tea. The coconut trees grow in such an abundance that the name of the State is derived from it. 'Keram' means coconut in Sanskrit and the word 'Keralam' according to C.A. INNES means the 'Land of Coconuts'.

If we try to study the resource potentials and productivity levels in Kerala on the basis of selected indicators, it is observed that the resource potentials in terms of agricultural resources are relatively high in Trichur, Ernakulam, Quilon and Trivandrum as will be evident from their composite resource indices contained in table 4. The high levels of resource indices also get reflected in the higher productivity levels of Kerala in these districts. The relevant indices are given in table 4.

It may be stated by way of clarification that in working out the composite resource indices, the selected indicators taken into account are:

(i) Gross area irrigated as percentage of gross area sown.

(ii) Average annual rainfall.

(iii) Extent of cultivated area in relation to geographical area.

(iv) Intensity of cropping.

(v) Soil characteristics, topography, texture and structure, climatic suitability, salinity, stoniness and tendency to erode, or in short soil productivity.

(vi) Gross area sown per capita.

The productivity indices have been worked out on the basis of rice and wheat crops only. The indices were worked out by taking the average of composite resource indices and the composite productivity indices for the 10 districts having the lowest resource indices equal to 100.

Average size of household.

The overall average size of household in various districts of Kerala vary between 5-6 persons as will be seen from table 5 (a). The urban households have generally higher average size compared to the rural households. The rural households engaged in cultivation have higher size of households compared to households engaged in household industry only, which in turn exceed the size of households engaged neither in cultivation nor in household industry. This perhaps underlines the pool of reserve manpower that has to be maintained for purposes of cultivation in the agricultural sector*. It is further observed from table 5 (b) that the average size of cultivating household has a tendency to increase with the increase in the size level of household operational holdings. This tendency is evident in almost all the districts of Kerala. It has to be carefully studied as to how far this increase in the average size of cultivating households is due to inclusion of unrelated persons?

1961 *Census household schedule.*

One of the salient features of the 1961 Census was the introduction and canvassing of household Schedule so as to collect detailed information about the economic activity of the family with special reference to the households engaged in cultivation as also those engaged in household industry. It was felt that though hitherto the unit of enquiry in almost all the censuses carried out so far was the individual, in 1961 census the unit of enquiry besides the individual was also extended to the household. This was necessitated by various considerations like the difficulty in the allocation of time and income from occupations like cultivation, household industries etc. among individuals, as also the fact that in many rural areas, goods produced do not enter the money market and here much of the family production is for family consumption itself.

* Population on the land in the 1961 Census of population by Ashok Mitra Technical Address at the Indian Society of Agricultural Statistics December 1962.

The detailed information for the households has been tabulated under four sets of households so as to distinguish the households engaged in cultivation and those engaged in household industry and those engaged in both or neither of them. The percentage distribution for these four sets of households has been given in table 6 for all the taluks of Kerala. It is observed from table 6 that households under category A (engaged neither in cultivation nor in household industry) form the majority among the total households. In some taluks like Cochin (Ernakulam), Peermade (Kottayam), the proportion is as high as 91 per cent under A. It may be stated that this category of households will also include households engaged in plantation etc., though the relative proportion of plantation households will, of course, differ from area to area and this may be one of the reasons why 'A' set of households form the majority in various taluks of Kerala. 'B' set of households, that is, households engaged in non-plantation cultivation seem to be important in Ernakulam, Kottayam, Alleppey, Quilon as also in Trivandrum as will be evident from their high levels in some of the taluks located in these districts. 'C' set of households, that is, households engaged in household industries only happen to be important in Chowghat and Cranganore (Trichur), Vaikom (Kottayam), Sherthallai and Ambalapuzha (Alleppey), Karunagapally (Quilon). The 'D' set of households, that is, double occupation households engaged both in cultivation and household industry are of insignificant importance in various taluks of Kerala.

Pure and mixed tenancy levels.

The cultivating households of 1961 census have been classified by 11 size classes of holdings and within each size class the cultivating households have been distributed according as they fall under ownership, pure tenancy and mixed tenancy holdings. The relevant statistics are presented in tables 7 (a) and 7 (b). It is observed from table 7 (a) that the relative proportions of households cultivating land held from private persons|institutions to total cultivating households in each of the various size classes

of HH operational holdings are of a very high order varying from 63 to 80 per cent in the districts of Cannanore, Kozhikode, Palghat and Trichur. The high proportions of pure tenancy households show a declining trend with the increase in the size of holding. The proportions of pure tenancy households have been observed to be of a lower order in the districts of Ernakulam, Kottayam, Alleppey, Quilon and Trivandrum.

The mixed tenancy holdings seem to be important in the districts of Trichur and Ernakulam. The proportions of mixed tenancy holdings show an increasing trend with the increase in the size of holding. This is because the holdings grow into more or less viable units when lands owned or held directly under the State and those leased in are added together. It may be stated here that in the case of such households (mixed tenancy) that the availability of leased in land help in the sustenance of these households and as such 'leasing in' cannot be wholly condemned.

The high pure tenancy holdings in the districts of Malabar and Trichur and their low proportions in the rest of the districts need to be carefully examined in the light of Land Reforms Act as prevalent in Kerala in 1961 so as to explain the implications of the high pure tenancy proportions as disclosed by 1961 Census results.

Average size of holdings.

The average size of holding on the basis of 1961 census for Kerala works out to 1.83 acres in rural areas and 2.26 in urban areas as against 7.39 acres for India (15 major States). Some variation in the average size of holding has, however, been observed in Cannanore, Kozhikode, Palghat and Trichur and the rest of the districts in the sense that the former set of districts have relatively higher size of holding. The necessary data are contained in table 8.

Distribution pattern of cultivating households and cultivated area.

In order to indicate the relative concentration of cultivating households under small sized holdings

upto 5 acres, in table 9 are given the cumulative percentage distribution of cultivating households by smaller size classes of holdings (less than 1 acre, 1-2.4 acres and 2.4-4.9 acres under the small sized group (0-5) for various taluks of Kerala. This table prominently displays heavy concentration of cultivating households in holding upto 5 acres as their proportions vary between 80-96% among various taluks, though admittedly, there are exceptional taluks also such as Chittur (40%), Udumbanchola (55%).

A study of relative pattern of distribution of cultivating households and cultivated area under broad size classes of holdings in Kerala shows (table 10) that about 90% of cultivating holdings happen to be located under small sized groups and account for about half of the total area under non-plantation crops as against about half of total cultivating households for India along with about 1|10th of the total area. At all-India level, the pure tenancy holdings are an exception in that these account for 3|4th of holdings along with 1|4th of area.

In the medium sized group of holdings in Kerala (Rural) the percentage of holdings varied from 4 to 13% and are associated with 22 to 33 per cent of area as against 1|4th to 1|3rd of households along with an equal proportion of area for India as a whole.

In the large sized group of holding, the cultivating households are few and far between in Kerala, though the percentage of area varies between 10-21. At all-India level, the relative proportions of area (about 10-21%) exceed the corresponding proportion of households (5-15%).

The distribution pattern of cultivating households and area for various districts of Kerala has been given in table 11. It is seen therefrom that Palghat, Alleppey and Trivandrum stand in a different category in the sense that higher proportions of area seem to be concentrated in relatively higher sized holdings. These conclusions are also borne out by the concentration ratios given in table 12. Table 12 shows that whereas in the districts of Ernakulam, Cannanore, Kozhikode, the concentration ratios vary

from .49— .52, in the other districts, they vary from .53— .57. In the rural area, in Kerala the concentration ratios are .59 and in urban areas .64. The concentration ratio based on the data of NSS 16th Round works out to .72 which is higher than the Census 1961 ratio. It is a matter for further study as to how far the higher concentration ratios observed on the basis of NSS data are due to the inclusion of area under plantation crops and the Census 1961 ratios are lower due to exclusion of area under plantation crops.

In table 13 an attempt has been made to indicate the extent of area held by top 5%, 10% and 20% and bottom 20% and 60% cultivating households in the various districts of Kerala.

TABLE—13

Extent of area (per cent) cultivated under non-plantation crops held by top 5%, 10% and 20% and bottom 20% and 60% cultivating households in the various districts of Kerala (1961 Census Household Schedule B-XI) Rural areas only

Districts	*Top* 5%	*Top* 10%	*Top* 20%	*Bottom* 20%	*Bottom* 60%
(1)	(2)	(3)	(4)	(5)	(6)
1. Cannanore	31	44	59	3	21
2. Kozhikode	29	40	56	3	22
3. Palghat	33	46	63	2	20
4. Trichur	26	41	58	2	22
5. Ernakulam	25	38	56	3	23
6. Kottayam	30	45	62	2	19
7. Alleppey	40	52	67	1	17
8. Quilon	33	44	62	1	16
9. Trivandrum	36	48	65	1	15
Kerala Total	34	48	64	2	16
A. Ownership holdings	35	49	65	1	14
B. Pure tenancy holdings	31	43	61	2	17
C. Mixed tenancy holding	30	42	60	2	20

This table shows that relatively speaking, there is a greater uneven distribution of cultivated area in the districts of Alleppey, Trivandrum, Palghat, Kottayam and Quilon. Thus in Alleppey top 5% of cultivating households account for 40% of cultivated area under non-plantation crops as against 25% in

Ernakulam. In these districts again top 20% cultivating households held about 65%, of the cultivated area.

Strengthening of family and hired workers per 100 *acres of cultivated area.*

In table 14 is given the strength of family and hired workers per 100 acres of cultivated area in various districts of Kerala Their relative strength per acre in all size class of holdings works out as below:

TABLE—14

Ranking of Districts on the basis of relative pressure of family and hired workers along with the indices of rice productivity

Districts	*FW*	*Rank*	*FW+ HW*	*Rank*	*Rice productivity indices*	*Rank*
Cannanore	101	4	146	1	159	8
Kozhikode	72	7.5	113	5	159	8
Palghat	50	9	101	7	159	8
Trichur	72	7.5	111	6	168	5.5
Ernakulam	104	2	144	2	168	5.5
Kottayam	81	5.5	92	9	220	1.5
Alleppey	81	5.5	100	8	220	1.5
Quilon	113	1	126	4	200	4
Trivandrum	102	3	128	3	211	3

It seems that there is perhaps more employment of hired workers in Cannanore, Palghat, Kozhikode, Trichur and Ernakulam. If we rank the pressure of family workers, family plus hired workers and the rice productivity per acre, it is observed that the existing pressure of workers in Cannanore, Kozhikode and Palghat as also in Trichur and Ernakulam is having its impact on reducing the productivity per worker. The existing pressure of workers in Alleppey, Quilon, Trivandrum and Kottayam is being sustained by relatively higher levels of productivity.

Participation rates.

The overall participation rate is relatively lower in Kerala compared to other States as will be seen from table 15.

TABLE—15

Over-all participation rates for rural areas for all ages

State	*Total*	*Males*	*Females*
Jammu & Kashmir	45.3	59.3	29.5
Punjab	36.2	53.4	16.5
Rajasthan	50.9	60.1	40.8
Uttar Pradesh	40.3	59.2	19.9
Madhya Pradesh	55.2	61.6	48.6
Bihar	42.2	56.0	28.5
Orissa	44.1	61.0	27.4
West Bengal	32.7	53.5	10.6
Assam	43.8	54.0	32.4
Gujarat	45.0	55.3	34.1
Maharashtra	52.4	58.1	46.7
Andhra Pradesh	55.2	64.3	46.0
Mysore	48.8	60.4	36.8
Kerala	34.0	47.4	20.9
Madras	49.6	62.2	37.1
All-India	45.1	58.2	31.4

It is observed that in Kerala the over-all participation rate is 34 as against 55 in Andhra Pradesh and Madhya Pradesh and 51 in Rajasthan while the rate of 45 exists for India as a whole. It will be further noticed that female participation rate is also low in Kerala. This aspect is further highlighted when we try to work out the participation rates for female workers (engaged in cultivation) by various size classes of holding. These statistics are presented in tables 16 (a), (b) and (c) for males, females and total respectively. Two points emerge when we consider the participation rates for female workers engaged in cultivation by size class of holding, and these are:

(a) There is a sharp discrepancy in the male and female participation rates in the various districts of Kerala. In fact, the female participation rates vary between 2-17 barring Palghat and Cannanore where it varies between 12-26. The over-all participation rate for all sizes of holding for male and female workers together engaged in cultivation vary from 23-32.

(b) The participation rates for female workers has a tendency to decrease with the increase in the size of holding as is of course to be expected.

The relatively lower overall participation rates in Kerala particularly the lower female participation rate might perhaps partly be explained by the

high levels of literacy prevalent in Kerala which results in lower proportion of persons in age-group 0-14 being returned as workers. This aspect is clearly brought out if we consider the participation rates of rural workers for age group 0-14 as is given in table 17.

TABLE—17

Participation rates of rural workers by Sex for Age Group 0-14

State	*Total*	*Males*	*Females*
Jammu & Kashmir	9.02	10.60	7.34
Punjab	6.97	9.10	4.57
Rajasthan	14.86	15.59	14.06
Uttar Pradesh	7.08	9.29	4.64
Madhya Pradesh	12.75	13.26	12.22
Bihar	8.29	10.14	6.34
Orissa	9.80	12.71	6.88
West Bengal	3.67	5.76	1.51
Assam	7.46	8.15	6.75
Gujarat	8.68	8.98	8.36
Maharashtra	10.97	10.65	11.31
Andhra Pradesh	15.27	17.69	12.82
Mysore	11.62	13.58	9.65
Kerala	2.07	2.19	1.96
Madras	9.64	11.06	8.21
All-India	9.16	10.62	7.63

Table 17 shows that whereas in Kerala participation rate for age group 0-14 is 2.07, this is as high as 12-15 in Madhya Pradesh, Rajasthan and Andhra Pradesh etc.

If we exclude the workers as also the population falling in the age group 0-14, the over-all participation rate for Kerala works out to be lower even then.

TA9LE—18

Participation rates of rural workers by sex for all ages excluding age group 0-14

	Total	*Male*	*Female*
Jammu & Kashmir	69.84	90.82	45.24
Punjab	59.35	88.26	26.08
Rajasthan	77.80	93.31	60.81
Uttar Pradesh	64.76	93.76	30.07
Madhya Pradesh	84.62	95.60	73.43
Bihar	67.22	91.96	43.96
Orissa	66.28	92.94	40.42
West Bengal	54.45	88.50	17.63
Assam	73.91	89.36	55.43
Gujarat	73.00	91.94	53.59
Maharashtra	82.52	93.34	71.86
Andhra Pradesh	81.33	94.86	67.64
Mysore	76.16	94.24	57.23
Kerala	58.05	83.11	34.55
Madras	73.61	93.23	54.23
All-India	70.52	92.38	48.06

As will be seen from table 18, the over-all participation rate is 58 for Kerala as against 83 for Maharashtra, 85 for Madhya Pradesh, etc. It is further observed from table 18 that the relative variations in the over-all participation rates in between States is of a relatively lower order among male rural workers compared to the female rural workers. One reason for low female participation rate in Kerala particularly among non-plantation cultivation might be because these are engaged to the extent of 70% of total female workers as (a) agricultural labourers (27.42%), (b) in household industry (17.82%) and (c) in other services (23.09%).

According to an I.L.O. Survey, the predominance of Muslim population has a tendency to deflate the female participation rate. It is observed from 1961 Census Religion Brochure that the proportion of Muslim and Christian population to total population of Kerala works out to about 40%. How far this proportion is responsible for lowering female and overall participation rates in Kerala is a matter for further probe?

Consumption of foodgrains:

If we try to work out the indices of per capita availability (net) of foodgrains per day with 1951-52 as the base year during last decade, the following indices work out:

TABLE—19

Indices of per capita availability of foodgrains per day 1951-52—100

1951-52	100	1956-57	87
1952-53	87	1957-58	80
1953-54	49	1958-59	89
1954-55	61	1959-60	90
1955-56	87	1960-61	86

The above indices show that the situation in Kerala has been rather alarming compared to other States. This situation might partly be explained by relatively higher levels of increase in total population during the last decade which was witnessed to be 24.76% and was the highest excluding Gujarat and West Bengal.

In order to study the relative levels of deficit of food-grains in various taluks of Kerala an attempt has been made to study the relative pressure of consumption households over the producing households engaged in production of foodgrains on the basis of 1961 census data. This has been made possible by grouping households engaged neither in cultivation nor in household industry and households engaged in household industry together and term them as "consuming households". The households engaged in cultivation only and those both in cultivation and household industry have been termed as 'producing households'. The relevant statistics are presented in table 20. It is observed from table 20 that the pressure of consumption households is as much as 7 times in Cranganore taluk of Trichur District. There are many other taluks where the consuming households are 3-4 times the producing households. Speaking at district level, one observes that the pressure of consuming households per 100 producing households is highest in Kozhikode followed by Trichur, Palghat, Cannanore and Ernakulam. Only Quilon and Trivandrum have lesser pressure of consuming households per 100 producing households and therefore, there is every possibility of deficit of foodgrain being higher in the first set of districts.

Surplus|deficit of foodgrains by size class of holding:

In order to study the extent of surplus|deficit of foodgrains by size classes of holding for Kerala State, on the basis of 1961 census and other related data, the folowing steps were taken:

(i) The relationship between the size of holding and the proportion of area under foodgrains and foodgrain productivity have been studied in the light of the balance sheet prepared for each size class of holding in terms of the districts, which are contributing to the total number of holdings and the cultivated area (Table 21). On this basis, it has been possible to isolate the districts which are contributing significantly to the holdings as also to the cultivated area in each size class. On the basis of

this pattern, it has been roughly assumed that the percentage area under foodgrains and the average productivity of foodgrains in those districts which account for the major portion of the total cultivated area in each of the various size classes at the State level could be utilised on a weighted basis for finding out the proportion of area under foodgrains and the foodgrains productivity per acre. The weightage used for combining the percent area under foodgrains and per acre foodgrain productivity in the relevant districts for each size class are net area sown as percent of total geographical area and percent area under crop respectively.

(ii) Keeping all these factors in mind, the proportion of area under foodgrains, double cropped area and the foodgrains productivity has been worked out for each size class of holding for Kerala State as a whole.

On the above basis, the gross foodgrain production for various size classes of holdings has been worked out. Some deductions of a very insignificant order have been made in order to arrive at net foodgrain production available for human consumption by size classes of holding.

In order to find surplus|deficit in each size class, the total cultivating population has been converted into adult consumption units on the basis of adult coefficients based on smooth age data relating to 1961 Census.

Coming to the consumption pattern of foodgrains by size classes of holding, it has been assumed that the per capita per day consumption in quantitative terms will be relatively higher among lower size class of holding and this will be compensated by more consumption of fish and tapioca. On this basis the total consumption of foodgrains has been worked out by various size classes of holding. The relevant data regarding surplus|deficit of foodgrains is presented in table 22. This table shows that barring less than 1 acre holdings, most of the other holdings contribute their mite to the generation of marketable surplus

in Kerala. The most important categories of holdings from the point of view of marketable surplus are 1-7.5 acres and 15-30 acres.

The total cultivating households contribute a surplus of about 4.4 lakh tons. But this surplus is not sufficient to meet the requirements of non-cultivating sector in rural and urban areas, which are estimated at 11.70 lakh tons. If we take into account the surplus of foodgrains of 4.4 lakh tons, the deficit of foodgrains for Kerala works out to 7.3 lakh tons.

In order to study the directions in terms of States from which the deficit in foodgrains is being made up, a table has been prepared indicating the imports of various categories of foodgrains in Kerala for the year 1959-60 on the assumption that the imports during 1959-60 would be available for consumption in 1960-61. The information given in the Table 23 shows that 89.14 per cent of import of foodgrains for Kerala comes from South India itself and within South India the major exporting Trade Blocks are Andhra Pradesh (23.94 per cent), Madras (36.49 per cent) and Hyderabad (16.95 per cent).

The total imports of foodgrains on the basis of Table 23 for the year 1959-60 works out to about 5 lakh tons, based on river and rail borne statistics. Perhaps the rest of the deficit of about 2-3 lakh tons might be met by the imports of foodgrains through trucks on the road.

TABLE—3

Absolute acreage under important plantation crops (1956-57)

(Area in terms of acres)

District	*Fruits and Vegetables*	*Drugs & Naorcotics and plantation crops*	*Coconut and others*	*Condiment & spices*	*Total (2-5)*	*Total Net Area sown*	*Proportion of 6 to 7*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cannanore	120988	10675	112387	109711	353761	529815	66.77
Kozhikode	107743	58458	251389	94038	511628	752861	67.96
Palghat	84992	22621	12436	42628	162677	588112	27.66
Trichur	118160	15526	136773	27062	297521	617712	48.17
Kottayam	176815	177441	208848	146568	709672	865214	82.02
Quilon	305125	50995	308121	41017	705258	822845	85.71
Trivandrum 1955-56	252358	15389	156915	27921	452583	497975	90.88

TABLE—4

Resource productivity indices for the various districts of Kerala

	District	*Resource indices**	*Productivity indices***	*Cropping pattern*
1.	Cannanore	166	159	Rice, Coconuts
2.	Kozhikode	100	159	Rice
3.	Palghat	168	159	Rice, Groundnuts
4.	Trichur	200	168	Rice
5.	Ernakulam	204	168	Rice
6.	Kottayam	172	220	Rice
7.	Alleppey	164	220	Rice, Coconuts, Tapioca
8.	Quilon	182	200	Rice, Coconuts, Tapioca
9.	Trivandrum	247	211	Rice, Tapioca, Coconuts

* Average of composite resource indices for the districts of Broach (Gujarat), Kozhikode (Kerala), Raisen, Ujjain, Vidisha (Madhya Pradesh), Thana (Maharashtra), Barmer, Bikaner, Churu and Jaisalmer (Rajasthan)—100.

** Average of composite productivity values for the 10 districts a given above-100.

N. B.—For details regarding methodology etc., refer to the Indian Journal of Agricultural Economics Vol. XIX No. 1 January-March 1964.

The productivity indices based on the data relating to 1955-58 regarding Palghat happen to be of a lower order contrary to general expectation. This might be because of eye-estimation method used in the estimation of rice production in earlier years.

TABLE—5 (a)

Average size of households in rural and urban areas and among those

(i) engaged neither in cultivation nor in household industry
(ii) engaged in household industry only and
(iii) engaged in cultivation (1961 census Household Schedule B-XVII).

Districts	*All household*	*Urban households*	*Rural households*	*Household engaged neither in cultivation nor household industry*	*Household engaged in household industry only*	*Household engaged in cultivation only*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Cannanore	6.08	6.78	5.96	5.50	6 29	6.72
2. Kozhikode	5.95	6.64	5.84	5.47	6.09	6.80
3. Palghat	5.54	5.70	5.52	5.04	5.72	6.68
4. Trichur	5.98	6.10	5.97	5.54	5.85	7.10
5. Ernakulam	5.98	6.11	5.95	5.62	6.06	6.47
6. Kottayam	5.70	6.21	5.65	5.18	5.96	6.30
7. Alleppey	5.66	5.88	5.62	5.35	5.49	5.92
8. Quilon	5.70	6.11	5.67	5.33	5.80	5.83
9. Trivandrum	5.54	5.66	5.50	5.12	5.55	5.75

TABLE 5(b)

Size of cultivating household by size class of household operational holdings

Size class of household operational holding	*Cannanore*	*Kozhikode*	*Palghat*	*Trichur*	*Ernakulam*	*Kottayam*	*Alleppey*	*Quilon*	*Trivandrum*
Less than 1 acre	6.20	6.27	5.71	6.04	5.89	5.93	5.58	5.47	5.40
1.0—2.4 acres	6.66	6.72	6.34	6.92	6.65	6.53	6.19	6.13	6.02
2.5—4.9	7.54	7.35	7.27	8.02	7.34	6.89	6.74	6.69	6.66
5.0—7.4	7.79	7.77	7.45	8.90	7.51	6.88	6.84	7.03	6.98
7.5—9.9	8.53	8.23	7.84	9.19	7.99	7.66	7.53	7.40	7.63
10.0—12.4	8.24	8.69	7.29	10.20	8.95	7.28	7.43	7.76	7.40
12.5—14.9	9.36	8.82	8.58	10.48	8.61	7.74	7.76	7.54	8.30
15.0—29.9	8.83	8.69	7.64	9.53	9.23	7.97	7.78	8.68	8.03
30.0—49.9	8.11	9.60	8.09	9.00	8.67	7.56	8.37	8.18	7.60
50+	8.00	7.28	8.67	7.86	9.60	9.09	9.67	11.00	9.00
Unspecified	6.36	7.43	5.00	5.75	6.30	5.06	4.50	5.71	5.62
Total	6.72	6.80	6.68	7.09	6.47	6.30	5.92	5.83	5.75

TABLE—6

Percentage distribution of total households among those (i) engaged neither in cultivation nor in household industry (A), (ii) engaged in cultivation only (B), (iii) engaged in household industry only (C) and (iv) engaged both in cultivation and household industry (D)

Districts/Taluk	*A*	*B*	*C*	*D*
(1)	(2)	(3)	(4)	(5)
1. CANNANORE	60.37	32.38	4.90	2.35
Kasaragod	57.75	36.53	4.33	1.39
Hosdurg	61.70	31.38	5.06	1.86
Taliparamba	51.02	39.64	5.31	4.03
Cannanore	64.03	24.08	8.82	3.07
Tellicherry	65.69	29.67	3.46	1.18
North Wynad	62.55	32.11	1.73	3.61
2. KOZHIKODE	69.84	24.46	4.94	0.76
Badagara	77.76	17.20	4.44	0.60
Quilandy	66.98	21.31	10.26	1.45
Kozhikode	70.76	22.99	5.60	0.65
Tirur	72.61	22.74	4.08	0.57
Ernad	66.38	29.66	3.43	0.53
South Wynad	65.40	32.31	1.29	1.00
3. PALGHAT	66.88	25.97	6.12	1.03
Perinthalmanna	60.58	35.86	3.11	0.45
Ponnani	71.62	23.27	4.50	0.61
Ottapalam	59.63	32.23	6.35	1.79
Palghat	68.46	22.46	7.67	1.41
Alathur	67.98	20.93	9.67	1.42
Chittoor	75.90	16.76	6.67	0.67
4. TRICHUR	65.94	24.35	8.54	1.17
Talappilly	65.92	27.67	5.74	0.67
Trichur	71.12	22.36	5.45	1.07
Chowghat	64.58	14.93	18.27	2.22
Cranganore	63.98	10.18	23.78	2.06
Mukundapuram	62.61	32.90	3.73	0.76
5. ERNAKULAM	58.74	34.63	4.94	1.69
Parur	80.19	13.44	6.08	0.29
Alwaye	49.27	38.33	8.13	4.27
Kunnathunad	35.63	48.26	4.02	2.09
Kanayannur	67.49	22.51	8.53	1.47
Cochin	90.60	5.60	3.30	0.50
Muvattupuzha	40.73	54.78	2.44	2.05
Thodupuzha	55.06	42.26	2.16	0.52
6. KOTTAYAM	56.91	38.23	3.45	1.41
Devicolam	85.52	13.24	0.85	0.39
Udumbanchola	86.36	11.76	1.78	0.10
Meenachil	43.12	54.09	1.50	1.29
Vaikom	35.22	44.97	15.70	4.11
Kottayam	45.65	49.67	2.82	1.86
Changanacherry	39.85	57.14	1.84	1.17
Kanjirappally	53.38	43.16	1.95	1.51
Peermade	91.94	7.32	0.65	0.09
7. ALLEPPEY	42.15	40.56	14.54	2.75
Sherthallai	35.92	10.71	47.65	5.72
Ambalapuzha	58.89	8.78	29.43	2.90
Kuttanad	75.68	19.50	4.14	0.68
Tiruvalla	34.44	63.59	1.07	0.90
Chengannur	24.16	71.42	1.32	3.10
Karthigappally	63.46	23.37	11.09	2.08
Mavelikara	20.79	74.36	1.97	2.88

Districs/Taluk	*A*	*B*	*C*	*D*
(1)	(2)	(3)	(4)	(5)
8. QUILON	31.30	61.64	3.23	2.84
Pathanamthitta	22.15	75.99	0.73	1.13
Kunnathur	15.99	80.76	0.90	2.35
Karunagappally	41.51	30.91	19.30	8.28
Quilon	56.03	37.56	4.17	2.24
Kottarakara	19.12	78.16	0.76	1.96
Pathanapuram	27.21	70.18	0.78	1.83
9. TRIVANDRUM	38.75	55.21	2.96	3.08
Chirayinkil	44.56	51.03	2.92	1.49
Trivandrum	61.43	35.49	2.29	0.79
Neyyattinkara	33.36	55.78	4.36	6.50
Nedumangad	26.24	70.11	1.76	1.89
STATE	54.88	37.26	6.02	1.84

TABLE—7(a)

Relative proportions of households (HHS) cultivating land held from private persons/Institutions to total cultivating H.H.S. in each size class of H. H. operation holding

District	*% of cultivating HHS to total HHS*	*Less than* 1	1.0— 2.4	2.5— 4.9	5.0— 7.4	7.5— 9.9	10.0— 12.4	12.5— 14.9	15.0— 29.9	30.0— 49.9	50+	*Unspecified*
1. Cannanore	77.91	81.81	77.35	70.58	65.16	59.46	59.85	52.38	52.43	44.44	..	42.86
2. Kozhikode	75.30	83.19	76.24	66.06	61.16	58.84	58.04	46.67	55.88	20.00	28.57	50.00
3. Palghat	79.62	87.03	85.70	77.79	72.95	57.79	64.80	48.95	57.31	43.43	42.42	27.27
4. Trichur	62.82	71.72	67.08	53.28	43.47	33.33	38.89	26.67	23.53	30.00	28.57	50.00
5. Ernakulam	29.80	38.74	27.51	15.53	9.83	10.59	3.81	9.76	..	..	..	4.35
6. Kottayam	12.87	16.45	11.17	5.71	5.48	8.70	3.94	..	12.15	5.56	8.33	1.67
7. Alleppey	12.09	13.33	10.75	8.17	10.58	8.97	14.29	4.76	10.13	9.76	..	..
8. Quilon	5.63	6.31	5.29	3.32	2.86	1.78	2.06	5.13	8.51	..	..	7.14
9. Trivandrum	8.23	10.03	6.54	3.52	2.94	2.70	4.96	5.41	..	..	..	2.22
Kerala	32.53	28.38	36.98	35.39	36.76	33.39	39.68	27.89	37.15	27.57	19.00	12.08

TABLE—7(b)

Relative proportions of H. H. S. cultivating land held on mixed tenancy basis to total cultivating H. H. S. in each size class of household operational holding

District	*% of cultivating HHS to total HHS*	*Less than* 1	1.0— 2.4	2.5— 4.9	5.0— 7.4	7.5— 9.9	10.0— 12.4	12.5— 14.9	15.0— 29.9	30.0— 49.9	50+	*Unspecified*
1. Cannanore	8.25	3.18	7.84	15.73	18.97	23.78	19.71	38.10	30.10	27.78	50.00	..
2. Palghat	11.01	2.83	6.59	15.28	16.86	28.90	20.11	39.16	25.10	28.28	27.27	..
3. Kozhikode	9.59	2.45	8.35	19.24	21.86	27.01	25.00	35.00	27.94	32.00	14.29	..
4. Trichur	19.02	4.91	16.35	32.33	41.44	57.72	45.06	63.33	61.76	45.00	57.14	..
5. Ernakulam	25.43	11.41	31.19	46.52	48.85	49.41	53.33	48.78	59.62	100.00	..	4.35
6. Kottayam	10.55	5.09	12.95	22.75	15.68	26.09	24.41	47.62	35.51	50.00	25.00	..
7. Alleppey	15.00	8.66	20.77	29.24	30.66	42.15	39.75	55.56	50.63	65.85	59.26	..
8. Quilon	9.68	5.24	13.54	21.29	20.52	28.00	22.68	30.77	23.40	36.36	50.00	..
9. Trivandrum	10.99	6.21	16.68	22.65	18.06	25.41	19.83	24.32	19.18	60.00	33.33	..
Kerala	12.58	5.99	14.61	24.07	24.18	33.52	27.59	43.07	33.72	40.74	37.00	0.48

TABLE—8

Average size of holding in rural and urban areas by interest in land

(a)		(b)			
District	*Average size of holding (Rural)*		*R/U*	*T/A/B/C*	*Average size of holding*
1. Cannanore	2.16	1961 Census	R	T	1.83
2. Kozhikode	2.37			A	1.43
3. Palghat	4.18			B	1.96
4. Trichur	2.48			C	3.28
5. Ernakulam	1.79		U	T	2.26
6. Kottayam	1.78			A	2.23
7. Alleppey	1.66			B	1.91
8. Quilon	1.23			C	3.39
		N.S.S. 8th Round 1953-54			1.83*
9. Trivandrum	1.28	N.S.S. 16th Round (1959-60)			1.96
		ALE—I (1950-51)			2.41*

*Erstwhile Travancore-Cochin State.

TABLE—9

Cumulative percentage of cultivating households under the small sized holdings (0-5)

	Total cultivating houscholds	*Upto 5 acres*	*Less than 1*	1.0-2.4	2.5-4.9
(1)	(2)	(3)	(4)	(5)	(6)
1. CANNANORE	100.00	92.54	37.50	40.42	14.62
(1) Kasargod	100.00	95.05	31.97	45.32	17.76
(2) Hosdurg	100.00	92.63	38.43	39.30	14.90
(3) Taliparamba	100.00	92.83	29.32	47.86	15.65
(4) Cannanore	100.00	95.21	51.18	33.70	10.33
(5) Tellicherry	100.00	94.84	50.07	34.86	9.91
(6) North Wynad	100.00	71.80	11.59	33.48	26.73
2. KOZHIKODE	100.00	90.18	35.03	38.85	16.30
(7) Badagara	100.00	97.53	50.37	37.48	9.68
(8) Quilandy	100.00	95.77	46.43	38.08	11.26
(9) Kozhikode	100.00	91.41	37.09	39.75	14.57
(10) Tirur	100.00	93.68	39.96	39.10	14.62
(11) Ernad	100.00	88.83	31.68	38.28	18.87
(12) South Wynad	100.00	75.04	9.22	40.40	25.42
3. PALGHAT	100.00	77.67	22.07	4.24	21.36
(13) Perinthalmanna	100.00	82.90	22.14	39.39	21.37
(14) Ponnani	100.00	89.27	31.48	37.13	20.66
(15) Ottapalam	100.00	89.87	31.43	39.21	19.23
(16) Palghat	100.00	70.36	16.43	31.45	22.48
(17) Alathur	100.00	68.66	15.24	28.46	21.96
(18) Chittur	100.00	40.43	3.58	15.72	21.13

	Total cultivating households	*Upto 5 acres*	*Less than 1*	1.0-2.4	2.5-4.9
(1)	(2)	(3)	(4)	(5)	(6)
4. TRICHUR	100.00	88.70	33.31	36.52	18.87
(19) Talappilly	100.00	86.13	30.08	37.40	18.65
(20) Trichur	100.00	86.28	27.88	37.33	21.07
(21) Chowghat	100.00	93.47	43.63	34.36	15.48
(22) Cranganore	100.00	88.95	37.29	32.04	19.62
(23) Mukundapuram	100.00	90.09	34.83	36.57	18.69
5. ERNAKULAM	100.00	93.94	45.07	35.31	13.56
(24) Parur	100.00	88.82	37.17	33.98	17.67
(25) Alwaye	100.00	92.20	43.87	33.46	14.87
(26) Kunnathunad	100.00	96.71	50.88	34.02	11.81
(27) Kanayannur	100.00	92.56	48.86	41.44	12.26
(28) Cochin	100.00	87.99	33.22	35.34	19.43
(29) Muvattupuzha	100.00	93.78	42.18	36.91	14.69
(30) Thodupuzha	100.00	95.44	45.31	38.88	11.25
6. KOTTAYAM	100.00	93.16	50.74	31.07	11.35
(31) Devicolam	100.00	82.20	14.04	37.63	30.53
(32) Udumbanchola	100.00	54.60	13.89	20.77	19.94
(33) Meenachil	100.00	95.44	45.62	36.68	13.14
(34) Vaikom	100.00	91.47	45.47	31.93	14.07
(35) Kottayam	100.00	95.23	62.53	24.74	7.96
(36) Changanacherry	100.00	96.88	61.66	28.39	6.83
(37) Kanjirappally	100.00	95.86	47.33	38.77	9.76
(38) Peermade	100.00	89.57	31.80	42.48	15.29
7. ALLEPPEY	100.00	94.68	61.68	24.65	8.35
(39) Sherthalai	100.00	96.45	59.24	27.94	9.27
(40) Ambalapuzha	100.00	90.42	54.51	23.94	11.97
(41) Kuttanad	100.00	64.27	23.12	24.64	16.51
(42) Tiruvalla	100.00	97.05	62.19	28.04	6.82
(43) Chengannur	100.00	97.19	65.60	23.22	8.37
(44) Karthigappally	100.00	93.24	63.33	20.04	9.87
(45) Mavelikara	100.00	96.39	65.92	23.14	7.33
8. QUILON	100.00	96.91	58.18	29.65	9.08
(46) Pathanamthitta	100.00	97.19	55.50	32.36	9.33
(47) Kunnathur	100.00	97.20	58.48	29.60	9.12
(48) Karunagapally	100.00	97.86	76.11	17.00	4.75
(49) Quilon	100.00	98.19	69.33	23.29	5.57
(50) Kottarakara	100.00	95.66	50.78	33.53	11.35
(51) Pathanapuram	100.00	96.36	53.02	32.64	10.70
9. TRIVANDRUM	100.00	95.78	60.37	26.64	8.77
(52) Chirayinkil	100.00	98.02	65.40	26.07	6.55
(53) Trivandrum	100.00	97.79	68.88	22.73	5.18
(54) Neyyattinkara	100.00	95.81	63.71	23.88	8.22
(55) Nedumangad	100.00	93.58	50.94	30.71	11.93

TABLE—10

Percentage distribution of cultivated households (h) and cultivated area (a) under small sized (upto 5 acres) medium sized (5-15 acres) and large sized (15 acres) holdings by interest in land in rural and urban areas

T—Total cultivating households/area—100
A—Ownership households/area—100
B—Pure tenancy households/area—100
C—Mixed tenancy households/area—100

State	Rural (R) Urban (U)	T A B C	Small Sized				Medium Sized		Large Sized				Average size of holding (acres)	Concentration Ratio
			Upto 1 acre		Upto 5 acres		(5-15 acres)		(15-50 acres)		(50—)			
			h	a	h	a	h	a	h	a	h	a		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Kerala	R	T	48.32	8.46	92.68	59.92	6.37	26.44	0.79	10.32	0.05	2.93	1.83	.5896
		A	57.76	12.91	95.11	66.79	4.26	22.14	0.42	7.25	0.04	3.03	1.43	.5859
		B	42.16	6.98	91.98	60.71	7.08	27.28	0.87	10.23	0.03	1.62	1.96	.5620
		C	23.00	2.26	83.88	45.61	13.78	33.34	2.19	16.29	0.15	4.76	3.28	.5506
	U	T	48.57	7.22	90.34	47.43	7.81	27.84	1.68	18.55	0.14	6.18	2.26	.6436
		A	53.95	8.06	90.88	45.15	7.09	25.80	1.80	20.97	0.20	8.06	2.23	.6726
		B	44.10	9.52	92.47	61.90	6.62	28.57	0.91	9.53	..	..	1.91	.5387
		C	24.31	..	81.02	35.72	15.96	35.71	2.90	21.43	0.12	7.14	3.39	.6296
All India	R	T	11.34	0.71	57.03	15.85	29.95	32.71	11.33	37.31	1.33	13.83	7.39	.5806
		A	11.61	0.72	56.94	15.50	29.78	42.28	11.41	37.33	1.41	14.52	7.36	.5839
		B	21.20	2.33	76.09	33.04	19.06	35.72	4.46	25.53	0.29	5.55	4.28	.5707
		C	5.14	0.28	48.08	13.39	36.12	33.84	14.31	39.94	1.46	12.82	9.07	.5386
	U	T	11.56	0.53	54.57	11.29	27.74	23.84	14.51	38.01	2.82	26.63	9.36	.6339
		A	11.51	0.52	53.66	10.60	27.75	22.85	15.00	37.80	3.14	28.48	9.63	.6369
		B	17.71	1.53	71.14	25.07	21.25	33.08	7.02	32.44	0.55	9.41	5.35	.6000
		C	5.05	0.13	43.01	9.07	34.85	25.82	19.13	42.20	2.96	22.85	11.72	.5759

h—Cultivating households
a—Cultivated area

Note:—The sum total of percentages under broad size classes may not add upto 100, because the percentages for unspecified households have not been given

TABLE—11

Cumulative percentage distribution of cultivating households and cultivated area by size classes of household operational holding for all districts of Kerala (1961 Census Household Schedule B—XI)

(Rural areas only)

Size class of household operational holding (acres)	*Cannanore*		*Kozhikode*		*Palghat*		*Trichur*		*Ernakulam*	
	Households	*Area*	*Households*	*Area*	*Households*	*Area*	*Households*	*Area*	*Households*	*Area*
Less than 1	37.50	8.74	35.03	7.40	22.08	2.64	33.31	6.71	45.07	12.60
1.00—2.49	77.92	38.35	73.88	36.10	56.32	16.97	69.83	29.96	80.38	43.80
2.50—4.99	92.54	62.28	90.18	60.40	77.68	35.00	88.70	56.80	93.94	70.58
5.00—7.49	97.06	75.11	95.86	75.07	87.89	49.94	95.09	72.57	97.69	83.41
7.50—9.99	98.14	79.45	97.52	81.13	91.53	57.48	97.08	79.53	98.67	88.15
10.00—12.49	98.94	83.59	98.71	86.76	94.95	66.64	98.39	85.44	99.27	91.93
12.50—14.99	99.19	85.15	99.03	88.62	95.86	69.64	98.88	88.12	99.51	93.74
15.00—29.99	99.79	96.80	99.75	95.10	99.09	86.01	99.71	95.18	99.81	97.29
30.00—49.99	99.90	98.69	99.88	97.29	99.72	91.86	99.87	97.71	99.84	98.04
	99.92	99.69	99.92	99.80	99.93	99.89	99.93	99.83	99.87	99.53
Unspecified	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Size class of household operational holding (acres)	*Kottayam*		*Alleppey*		*Quilon*		*Trivandrum*		*Kerala*	
	Households	*Area*	*Households*	*Area*	*Households*	*Area*	*Households*	*Area*	*Households*	*Area*
Less than 1	50.73	14.25	61.68	18.56	58.18	15.18	60.38	15.06	48.32	8.46
1.00—2.49	81.80	41.81	86.33	42.00	87.82	53.37	87.02	47.85	80.27	36.02
2.50—4.99	93.15	64.30	94.68	59.73	96.90	79.49	95.78	71.96	92.68	59.92
5.00—7.49	97.46	79.10	97.06	68.49	98.88	89.40	98.28	83.88	96.73	73.45
7.50—9.99	98.31	83.24	98.03	73.54	99.44	93.32	98.96	88.46	97.92	79.09
10.00—12.49	98.90	86.93	98.73	78.24	99.68	95.50	99.40	93.33	98.78	84.33
12.50—14.99	99.09	88.42	99.00	80.49	99.78	96.58	99.54	93.78	99.05	86.36
15.00—29.99	99.58	94.32	99.68	89.25	99.90	98.59	99.81	98.21	99.71	94.03
30.00—49.99	99.66	96.13	99.86	93.40	99.93	99.45	99.83	98.76	99.84	96.68
	99.72	99.02	99.98	99.94	99.93	99.65	99.84	99.19	99.89	99.61
Unspecified	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE—12

(Concentration Ratios in Kerala 1961 Census, NSS (8th & 16th Rounds ALE I)

(a)			(b)		
	District	*Concentration Ratio (Rural)*	*R/U*	*T/A/B/C*	*Concentration Ratio*
1.	Cannanore	0.5187	R	T	0.5896
2.	Kozhikode	0.5012		A	0.5859
3.	Palghat	0.5684		B	0.5620
4.	Trichur	0.5161	1961 Census	C	0.5506
5.	Ernakulam	0.4896	U	T	0.6436
6.	Kottayam	0.5269		A	0.6726
7.	Alleppey	0.5745		B	0.5387
				C	0.6296
8.	Quilon	0.5334	N.S.S. 8th round (1953-54)		0.6228
9.	Trivandrum	0.5665	N.S.S. 16th round (1959-60)		0.7239
			ALEI (1950-51)		0.6480

T—Total cultivating Households

A—Ownership Households

B—Pure tenancy households

C—Mixed tenancy households

TABLE—16(a)

Male participation rates

Sizes class of holding	*Cannanore*	*Kozhikode*	*Palghat*	*Trichur*	*Ernakulam*	*Kottayam*	*Alleppey*	*Quilon*	*Trivandrum*	*Kerala*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All sizes	38.70	39.33	43.46	36.23	40.74	39.70	26.70	39.40	36.52	39.02
Less than 1 acre	34.17	36.33	40.39	34.14	38.95	38.24	36.76	38.40	34.75	36.98
1.0—2.4	40.58	40.06	44.37	37.71	42.13	40.77	38.91	40.64	38.44	40.42
2.5—4.9	42.23	42.12	44.43	37.06	42.70	42.21	37.99	41.03	61.47	41.25
5.0—7.4	41.80	41.84	42.85	36.53	41.00	41.82	36.81	39.96	40.61	40.75
7.5—9.9	39.45	41.35	43.87	35.11	39.26	38.16	37.02	37.74	36.71	39.55
10.0—12.4	40.71	40.02	30.47	32.99	37.42	37.76	36.14	34.01	40.31	39.85
12.5—14.9	37.91	38.03	38.56	33.23	35.84	36.67	3.67	34.21	37.42	36.73
15.0—29.9	36.81	38.69	45.93	31.70	32.34	35.24	36.42	36.02	35.37	39.42
30.0—49.9	40.74	24.64	41.56	35.79	30.77	41.67	37.30	39.53	26.32	37.36
50.0+	37.50	46.15	38.92	40.63	44.00	28.57	43.75	33.33	13.33	39.16
Unspecified	34.04	37.04	61.54	38.10	37.14	42.42	57.14	36.47	38.33	39.83

TABLE—16(b)

Female participation rates

Size class of holding	*Cannanore*	*Kozhikode*	*Palghat*	*Trichur*	*Ernakulam*	*Kottayam*	*Alleppey*	*Quilon*	*Trivandrum*	*Kerala*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All sizes	25.72	10.25	19.57	14.55	16.65	5.89	8.50	8.20	9.03	12.19
Less than 1 acre	26.20	10.13	19.14	16.25	16.21	6.25	10.40	9.68	10.40	12.01
1.0—2.4	26.20	10.15	20.59	15.63	17.93	5.87	6.82	6.84	7.55	12.49
2.5—4.9	26.04	10.92	18.84	13.33	17.21	5.41	5.03	5.51	6.41	12.43
5.0—7.4	23.78	10.47	19.92	11.30	12.94	5.30	4.03	4.79	7.42	12.30
7.5—9.9	17.49	10.71	17.31	9.22	12.01	3.20	2.29	4.06	6.11	10.57
10.0—12.4	19.93	8.23	22.65	10.09	10.74	3.62	4.23	3.65	4.99	12.70
12.5—14.9	15.93	12.65	16.11	5.59	6.67	5.19	0.40	6.34	1.97	9.37
15.0—29.9	14.18	7.39	18.95	5.38	6.53	2.40	2.28	3.05	4.36	10.65
30.0—49.9	13.85	3.92	11.22	11.76	7.69	1.56	..	6.38	5.26	7.62
50.0+		8.00	13.87	17.39	8.70	3.92	0.75	..	..	7.21
Unspecified	11.90	8.00	17.24	12.00	8-00	1.39	..	6.67	10.53	7.53

TABLE—16(c)

Workers (Family works only) and their participation rates by size class of holdings for rural areas only

(Census Tables B-XII, B-XV & B-XVII)

Total participation rates

Size class of holding	*Cannanore*	*Kozhikode*	*Palghat*	*Trichur*	*Ernakulam*	*Kottayam*	*Alleppey*	*Quilon*	*Trivandrum*	*Kerala*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All sizes	32.28	25.03	31.38	25.25	28.76	22.96	22.81	23.85	22.81	25.63
Less than 1 acre	30.11	23.23	29.28	24.72	27.53	22.29	23.36	23.88	22.41	24.33
1.0—2.4	33.51	25.34	32.13	26.44	30.18	23.48	22.77	23.96	23.21	26.53
2.5—4.9	34.39	26.79	22.44	25.26	30.20	24.06	21.52	23.85	23.68	27.12
5.0—7.4	33.22	27.09	31.72	24.03	27.12	24.39	20.53	23.34	24.52	27.01
7.5—9.9	28.71	27.04	30.86	22.56	25.55	21.86	19.88	21.79	22.17	25.55
10.00—13.4	30.82	25.15	34.43	22.14	23.94	21.43	19.73	19.65	22.91	26.69
12.5—14.9	27.74	26.28	27.55	19.87	20.96	21.23	18.20	20.74	19.87	23.43
15.0—29.9	26.81	24.37	32.76	18.62	19.17	19.23	19.37	20.10	20.82	25.53
30.0—49.9	28.77	15.83	26.72	24.44	19.23	22.79	20.11	22.22	15.79	23.30
50+	18.75	27.45	26.92	30.91	27.08	16.00	21.84	18.18	7.41	23.58
Unspecified	23.60	23.08	38.18	23.91	22.07	23.30	22.22	22.50	23.72	23.83

TABLE—20

Pressure of Consuming Households per 100 Producing Households (Food grains only) in Kerala

1961 Census—Household Schedule
(B—X)

District/Taluk		*District/Taluk*	
CANNANORE	188	KOTTAYAM	152
Kasargod	164	Devicolam	633
Hosdurg	201	Udumbanchola	745
Taliparamba	129	Meenachil	81
Cannanore	268	Vaikom	104
Tellicherry	224	Kottayam	94
North Wynad	180	Changanacherry	71
		Kanjirappally	124
KOZHIKODE	296	Peermade	1250
Badagara	462	ALLEPPEY	131
Quilandy	339	Sherthallai	508
Kozhikode	323	Ambalapuzha	756
Tirur	329	Kuttanad	395
Ernad	231	Tiruvalla	55
South Wynad	200	Chengannur	34
		Karthigappally	293
PALGHAT	270	Mavelikara	29
Perinthalmanna	175	QUILON	55
Ponnani	319		
Ottapalam	194	Pathanamthitta	30
Palghat	319	Kunnathur	20
Alathur	347	Karunagappally	155
Chittoor	474	Quilon	151
		Kottarakara	25
TRICHUR	292	Pathanapuram	39
Talappilly	253		
Trichur	327	TRIVANDRUM	72
Chowghat	483		
Cranganore	717	Chirayinkil	90
Mukundapuram	197	Trivandrum	176
		Neyyattinkara	61
ERNAKULAM	175	Nedumaganad	39
Parur	628	STATE TOTAL	156
Alwaye	135		
Kunnathunad	99		
Kanayannur	317		
Cochin	1540		
Moovattupuzha	76		
Thodupuzha	134		

TABLE—21

Districts Accounting for two-third and more of the total cultivating household and cultivated area arranged in order of their relative importance for rural areas only

Size class of holding				
Less than 1 acre	Quilon	Trivandrum	Alleppey	
1.0-2.5	Quilon	Kozhikode	Trivandrum	Cannanore
2.5-4.9	Quilon	Palghat	Kozhikode	Cannanore
5.0-7.4	Palghat	Kozhikode	Kottayam	Quilon
7.5-9.9	Palghat	Kozhikode	Trichur	Quilon
10.0-12.4	Palghat	Kozhikode	Trichur	Alleppey
12.5-14.9	Palghat	Alleppey	Trichur	Kozhikode
15.0-29.9	Palghat	Alleppey	Kozhikode	
30.0-49.9	Palghat	Alleppey		
50—	Palghat	Alleppey		

TABLE—22

Supply/Deficit of Foodgrains by size classes of holding in Kerala

Size class of Households Operational holdings	*Net production of Food grains (Tons)*	*Total consumption of Food grains (Tons)*	*Surplus Deficit of Food grains (Tons)*	*% Distribution of surplus Deficit over size classes*	*Surplus Deficit as % of Net production*	*% Distribution of Net production of Foodgrains*
Less than 1	71356	244488	—173132	—39.34	—242.63	7.08
1.00-2.49	273136	182168	+90968	20.67	33.31	27.09
2.50-4.99	238413	78845	+159568	36.25	66.93	23.65
5.00-7.40	148150	32894	+115256	26.19	77.80	14.69
7.50-9.99	56735	10305	+46430	10.55	81.84	5.63
10.00-12.49	52144	7479	+44665	10.15	85.66	5.17
12.50-14.99	20448	2546	+17902	4.07	87.55	2.03
15.00-29.99	79589	6941	+72648	16.51	91.28	7.89
30.00-49.99	30528	1341	+29187	6.63	95.61	3.03
50.00+	34248	584	+33664	7.65	98.29	3.40
Unspecified	3485	541	+2944	0.67	84.48	0.34
Total all sizes	1008232	568132	440100	100.00	43.65	100.00
Household engaged in household industry only (Rural)		79398				
Household engaged neither in Cultivation nor in Household industry (Rural)		815746				
All Rural Areas		1463276				
All Urban Areas		276308				
State As a Whole		1739584				

TABLE—23

Imports of various categories of foodgrains in Kerala by trade blocks for 1959-60

1. NORTH INDIA

	Trade Block	*Total Kerala (mds)*	*p.c. distribution*
	(1)	(2)	(3)
1.	Punjab	188998	1.45
2.	Jammu and Kashmir	..	..
3.	Rajasthan	199984	1.53
4.	Ajmer	..	..
5.	Himachal Pradesh	404	..
6.	Pepsu	25288	0.19
7.	Delhi	1741	0.01
8.	Total	416415	3.18

2. EAST INDIA

	Trade Block	*Total Kerala (mds.)*	*p.c. distribution*
	(1)	(2)	(3)
1.	Assam	4626	0.04
2.	Bihar	59752	0.46
3.	Orissa	89484	0.68
4.	Calcutta	86200	0.66
5.	West Bengal	1728	0.01
6.	Manipur	..	..
7.	Tripura	..	..
	Total	241790	1.85

3. SOUTH INDIA

	Trade Block	*Total Kerala (mds.)*	*p.c. distribution*
	(1)	(2)	(3)
1.	Andhra (excluding ports)	3128496	23.94
2.	Madras (excluding ports)	4768894	36.49
3.	Hyderabad	2214486	16.95
4.	Mysore	52421	0.40
5.	Travancore-Cochin	14458	0.11
6.	Coorg	..	..
7.	Andhra Ports	248601	1.87
8.	Cochin Port	532120	4.07
9.	Madras Port	310639	2.38
10.	Other Madras port	258054	1.94
11.	Pondicherry and Karikal	129642	0.99
	Total	11647811	89.14

TABLE 23—(*Contd.*)

4. WEST INDIA

	Trade Block	*Total Kerala (mds.)*	*p.c. distribution*
	(1)	(2)	(3)
1.	Bombay (excluding ports)	282056	2.16
2.	Saurashtra (excluding ports)	544	..
3.	Kutch	..	..
4.	Bombay port	7749	0.06
5.	Saurashtra port	5686	0.04
	Total	296035	2.26

5. CENTRAL INDIA

	Trade Block	*Total Kerala (mds.)*	*p.c. distribution*
	(1)	(2)	(3)
1.	Madhya Pradesh	421924	3.23
2.	Madhya Bharat	24008	0.18
3.	Uttar Pradesh	15130	0.12
4.	Bhopal	4904	0.04
5.	Vindhya Pradesh	..	..
	Total	465966	3.57

Source: Accounts Relating to the Inland (Rail and River Borne (Trade of India for twelve months ending March, 1960 issued by the Department of Commercial Intelligence and Statistics, Calcutta.

	Imports by rail and river (mds.)
North India	416415
East India	241790
South India	11647811
West India	296035
Central India	465966
	13068017 mds. or

480054 tons or about 5 lakh tons.

5. THE GROWTH OF POPULATION OF KERALA— SOME METHODS TO TACKLE THE PROBLEM

by

K. A. GEORGE,
Assistant Director,
Bureau of Economics and Statistics,
Kerala.

1. *Introduction.*

Kerala's troubles on the population front can be traced to the predominently agricultural character of its economy. The high density on the farm land, and the consequent low real income is impeding economic development of the State. The fast rate of growth of population, a sizable portion of which remains back on the land due to the dearth of other avenues of gainful employment in industry, transport and other services, continually adding to the difficulties.

In this paper, an attempt is made to assess the economic problems born out of the present density of population and its fast growth rate. The characteristics of the population affecting the population growth are then examined to find out areas requiring attention for its control. The results from the various surveys conducted by the Demographic Research Centre, Trivandrum and other data have been utilised for the purpose. Finally the methods for controlling population are indicated.

The population of the State was 169 lakhs as per the last census with a density of 1127 per square mile. The density, high as it is, need not be a cause of serious concern if economic development can be speeded up at a rapid rate to cover the deficiency in economic development that exists, as well as that will be created by the fast growth rate. But the situation in Kerala has reached that stage in which, density, rapid growth rate and the agricultural character of the economy are impeding economic growth. An appraisal of the existing economic situation is therefore necessary to understand the gravity of the problem.

2. *Population problem.*

The density of population of Kerala (1127 persons per sq. mile) is the highest in India and is more than 3 times the all India density. West Bengal is the only State similar in this regard to Kerala. Uttar Pradesh and Madras States which come next have barely only more than half the density of Kerala. Other States are far behind in this regard.

Kerala has been a long settled country and the character of the economy still continues to be predominently agricultural. Those advanced countries with similar densities of population, like the Netherlands and Belgium, underwent a shift from an agricultural economy to an industrial one long before they attained high densities. It is only too well known that an agricultural economy cannot support such a high density of population as in Kerala.

The agricultural character of the economy is revealed to a certain extent by the percentage of people living in rural areas. It was 88% in 1941 and the percentage reduction in 1961 was only 3%. The immobility in the occupational pattern is revealed from the fact that between 1901 and 1961 the number of persons engaged in agriculture increased by 32%. The sectoral break-up of the estimated regional income for Kerala for 1955-56 also reveal this heavy dependence of the economy on agriculture. In 1955-56, 49% of the total income was derived from agriculture and allied activities. This stood at 48% in 1960-61 (at current prices). Against this, the estimates for the Industrial Sector are 20% and 18% respectively for the corresponding periods. These estimates reveal the snail place of the rate of growth of industrial development in this State and the importance of agriculture in the economy*.

This heavy dependence of the population on agriculture has inevitably led to excessive fragmentation of holdings making them uneconomic. A survey on land holdings conducted in 1956 has shown that more than half the holdings are less than one acre and that

*Source: Regional Income of Kerala, Bureau of Economics & Statistics.

about 90% are less than 5 acres in extent. Table 1 gives the number of holdings classified into broad groups.

Table 1*

Distribution of holdings in Kerala

SIZE GROUP	*Number of holdings*	*Percentage number*
Less than 1 acre	17,20,012	58.04
1 to 2 acres	6,04,368	20.39
2 to 5 acres	3,12,878	10.59
Above 5 acres	3,25,328	10.98

The per capita cultivated land in Kerala was 27 cents in 1961. Even taking into account agricultural workers, the land available was only 3.5 acres and the sown area only about 2 acres per person. Considering the heavy dependency of nearly 2 on an average earner in the State, it is obvious that the area is too insufficient to make a proper living.

One of the results of this over-crowding on the farm land is Kerala's chronic poverty. If the State is still poor, her level of living could not have risen much in earlier decades. The per capita income which is an index of the economic situation reveals this to a certain extent. The estimate for the period from 1955-56 to 1960-61 are given in Table 2.

Table 2†

Per capita income in Rs. of Kerala at current and constant prices

YEAR	*KERALA*	
	Constant prices	*Current prices*
1955-56	232.71	232.71
1956-57	234.75	249.78
1957-58	239.34	260.44
1958-59	240.55	271.19
1959-60	243.77	286.12
1960-61	253.93	306.89

* Report on the Survey of Land holdings, Kerala & Madras.

† Regional Income Unit, Bureau of Economics & Statistics, Kerala.

These estimates, in monetary terms, self-revealing as they are, do not reveal the whole picture. Figures on real income are needed for this but they are hard to get. Patterns of food consumption can be of some help in this regard.

Surveys to obtain family budgets of (1) Workers generally (in 1955-56), (2) Workers in occupational groups like toddy tappers (in 1957-58) and N.S.S. family budget surveys have revealed that about 60 to 70% of the income (equating expenditure to income) are spent on food items alone. The estimates are given in Table 3.

Table 3*

Total expenditure and percentage spent on food by certain occupational groups in Kerala

ITEMS	*Working Class* 1955-56	*Low income groups* 1958-59	*Toddy Tappers* 1957-58
Total expenditure (in Rupees)	..	174	137
Percentage on food	60	69	63

Even after spending a disproportionately large amount on food items, it is seen that the average man still goes underfed (as is shown by the elasticities of expenditure calculated from the data obtained through the toddy tappers' survey). Another corroborating evidence in this regard is the gap in the required and the available quantity for consumption of rice in the State. In 1960-61 the total available quantity of rice for consumption was only 17 lakh tons (production and imports) while the requirement at 14 ozs. per adult male was 20 lakh tons, leaving a gap of 3 lakh tons. The inference can be that, to this extent, the population went underfed. Such a deficiency in the consumption of food even after spending a major share of the income on it reveals a low real income.

If the present economic situation is so dreary, that for the future appears to be still bleaker owing to the mounting rate of population growth. Table

* *Source*: Bureau of Economics & Statistics, Kerala.

4 gives the population of each decade from 1901 to 1961 for Kerala and India together with the growth rates.

The phenomenal growth rate of population of Kerala in recent decades is illustrated by the steady gain in the proportion of the population of the State to that of India. Between 1901 and 1961 it increased from 2.71% to nearly 4% of the population of India. This, it must be remembered is in the face of a mounting growth rate for India also.

The rapid growth rate is seen to have started after the decade ending with 1920. During these decades the population nearly doubled in the first three decades and if the growth rate continues unimpeded it would almost treble by 1971. By 1991 the population will be about 3.3 crores with a density of about 2000 persons per square mile. This mounting growth of population which seems to grow with the decades is continually eroding the gain in the regional income created by the developmental activities.

TABLE—4*

Population of Kerala and India and their Growth Rates

			1901	1911	1921	1931	1941	1951	1961
Population in Lakhs	Kerala		63.96	71.48	78.02	95.07	110.32	135.49	169.04
	India		2362.81	2521.22	2513.52	2790.15	3187.01	3611.30	4392.35
	Percentage of Kerala Population to India		2.71	2.84	3.10	3.41	3.46	3.75	3.85
Rate of Growth	Geometrical rate in percentage	Kerala	1.19	0.90	1.98	1.50	2.08	2.24	
		India	0.65	—0.33	1.05	1.34	1.26	1.98	
	Decennial variation in percentage	Kerala	11.75	9.16	21.85	16.04	22.82	24.76	
		India	5.73	—0.31	11.01	14.22	13.31	21.50	

Source: Census of India—Paper No. 1, 1962

3. *The goals.*

Among the various problems, attendant on the dense agricultural population of Kerala that require solution, the most pressing one is the low standard of living of the people and therefore the goal that should receive more attention is greater real income. Since in the State, the high density, rapid growth rate and the agricultural character of the economy are impeding economic development, the logical approach at improving living standards would be to slow down the growth rate of population together with effecting a shift from an agricultural economy to an industrial one.

4. *Factors affecting population growth.*

The demographic characteristics that influence population changes are the birth rate, death rate and migration. The migrations both in and out are mostly short term ones as regards the State. Therefore the birth rate and death rate can be taken as the chief determinents of population changes in Kerala.

Death rate.

The death rate has been falling in the State for the last few decades. The death rate calculated from Census figures for the 3 decades beginning with 1931 were 25, 18 and 16 respectively per 1000 population. If the decline observed in the mortality rates is followed up in the coming decades also, one can reasonably expect that Kerala's death rate will stabilise at a minimum in these decades.

Birth rate.

The birth rate of the State continues to be high as in past decades. The rates for the 3 decades beginning with 1931 calculated from the Census data are 40.1, 39.8 and 38.9 respectively. The phenomenal increase of the population of the State in recent decades is thus due to the increase in the net balance as a result of the lowering of the death rate in the context of a continuing high birth rate. The increase will be even more in the future if the decline in death rate together with the high birth rate persist.

5. *Methods to tackle the population problem.*

The most important objects in designing methods to improve the existing demographic situation may be (i) A halt to the mounting population growth due to the high birth rate and a decreasing death rate and (ii) an immediate easing of the crowding on the farm land. Methods designed for the former, though it can help the latter objective substantially, cannot be expected to be sufficient because it may take a long time in producing favourable results. In a matter like birth control and family limitation, old traditions, habits and mores of the various communities will yield ground only slowly. Besides, ours is a democratic set up and the people cannot be compelled to acquiesce but only persuaded to agree. Therefore, special measures also have to be designed to ease the crowding on the farm land quickly.

The control of future population growth through birth control has to be continued for a long period. In designing the details of the policy, the knowledge gained on the attitude, knowledge, and practice of family planning among the population, obtained through surveys on the subject can help.

The survey conducted by the Demographic Research Centre on the Attitude to Family Planning in 1958 and 1959 has shown that knowledge of family planning among the people is poor. Therefore steps should be taken to speed up propaganda to educate the people. Since the students form a fair portion of the future population they should be educated in the subject. Since most of the students drop out after the school course, the last year students at the schools should be educated on family planning. The students at the University level should also be educated in this regard. Family planning methods is better left out from the educational programme.

Another important aspect revealed by a survey of persons visiting family planning clinics conducted by the Demographic Research Centre in 1961 is the resistence to the family planning idea by certain communities in the State. The proportion of members of these communities visiting these clinics have

been found to be less than their proportion in the general population. Propaganda among these communities have to be carried on with even more tempo to lessen and finally to break this resistence as otherwise these communities will increase disproportionately, thus defeating substantially population control through birth control in the future.

The studies conducted by the Demographic Research Centre, Trivandrum in 1961 and 1963 have shown that more people in the low income group who are illiterate or semi literate prefer sterilisation than persons in the higher income groups and having better educational status. This may be a pointer to a future decline in preference to this method when education spreads and the level of living rises. Since the method is almost cent per cent effective, advantage through this method should be taken in the immediate future while there is yet time. Sterilisation of persons with fewer children should be given more financial encouragement.

Sterilisation as a means to achieve birth control is a popular method in the State and may be adopted for the present, but it has certain drawbacks which may necessitate a slackening in its adoption in the future. For one thing, it is not an easily reversible process, should any catastrophy like war or some epidemic strike out at a future date, the country will be left helpless in the face of a decaying demographic situation. Secondly as the surveys have shown, the method may fall out of favour with the couples in future as their economic and educational status improve.

Intensive research to invent a quick, easy, inexpensive and reversible birth control device should be pushed through. The existing methods, other than sterilisation are not well suited to the conditions of the State. Besides their effectiveness is doubtful as the pregnancy rates have shown.

The raising of the age at marriage by legislation or by placing financial burden, on early marriage is a method to achieve a reduction in births. Of late, the age at marriage is registering an upward trend

probably due to the advancement in education. The survey in Trivandrum City on Attitude to Family Planning conducted in 1959 has definitely shown a trend in this direction. With the rapid advancement in education in the State (during the 5 year period between 1957-58 and 1962-63 an increase of about 30% in the number of students was registered) which leads other States in this regard, with 55% of the males and 39% of the females as literates (1961 census) a consensus of opinion would have emerged in favour of this. The average age at marriage which is now about 20 for females can in this context be raised by 3 to 5 years.

A study on the marumakkathayam tarwads conducted by the Demographic Research Centre, Trivandrum has shown that the average age at marriage of females in the 30's was about 16 against the present average age of 20. This rise in age at marriage may be the counter weight to the gradual removal of the taboos on widow marriage and other social customs (that must have acted in favour of an increased birth rate during these decades) to keep the rate from going up. This may be taken as an evidence to the belief that raising age at marriage can act against birth rates.

A policy of population control in a democratic set-up based on birth control alone may not yield substantial immediate dividends. But the crowding of the increasing population on the available farm land impeding economic development, is the most pressing problem as regards Kerala and it requires immediate solution if the country is to achieve substantial economic progress. In this regard therefore a very bold and imaginative policy which will yield quick results have to be adopted.

Migration on a large scale may be encouraged. In this regard, the strong tendency exhibited by the Kerala people in favour of farm land migration is a good sign. The spurt of growth rates in Quilon, Kottayam, Kozhikode, Cannanore (where crowding on the farm land is less) in the 40's and 50's compared to other districts show this strong tendency (As

shown by Table 5 which gives the decennial growth of population of each district from the decade 1921. In the case of Trivandrum, the spurt in growth rate may be due to the pull of the Trivandrum city. The scope for farm land migration is very limited in this district).

Table 5

Decennial growth of population of Kerala (in percentages)

(District-wise)

NAME OF DISTRICT	1921	1931	1941	1951
STATE	22	16	23	25
Trivandrum	29	18	31	31
Quilon	29	25	29	32
Alleppey	24	13	19	19
Kottayam	37	22	23	31
Ernakulam	27	21	20	22
Trichur	22	16	22	20
Palghat	11	9	18	14
Kozhikode	6	12	24	27
Cannanore	15	13	22	29

This tendency should be exploited to send out about say 10,000 agricultural families every year for the next 10 years to other sparsely populated States like Andhra Pradesh, Assam, etc. Pockets suitable for farm land migration should be found out and whole families should be encouraged to emigrate by providing over head facilities at the place of migration, giving financial aid as grants and loans as well as free travel facilities. It is not sufficient to have these families removed to these places but their fortunes in the place of migration have to be pursued and their welfare assured so that their example may be a guidance to future migrants.

An emigration scheme will be expensive and difficult to put through, but under the population crisis of Kerala, a strong bid in this direction is absolutely necessary. It is felt that with the whole hearted support of the Central and sister governments, the target is not anything which cannot be achieved.

Steps to promote urbanisation shauld be speeded up to wean a substantial number of people from agriculture and settle them in other pursuits like manufacturing, transporting, other services, etc. Industrialisation is one of the most important methods to achieve this. Expansion of the existing towns should be planned to attract more and more people by providing over head facilities and avenues of employment, loans for building houses in towns should be provided liberally. Housing colonies should be built. The existing system of giving loans to build houses in rural areas should be discouraged or stopped. A small new industrial township should be planned and built in each year for the next few years. These townships should be expanded industrially to attract more and more people so that within a decade at least 10,000* families would have moved into it. This scheme also requires substantial investment and can succeed only with the support of the Central Government. Kerala being the demographic trouble spot of India deserves this help.

7. *Summary.*

Kerala's demographic troubles are caused by the predominently agricultural character of its economy and the dense population on the farm land resulting in economic stagnation. The large growth of population (as a result of the high birth rate and decreasing death rate) adds to the difficulties of the already bad economic situation.

The high density and the mounting rate of growth call for the control of population through birth control. Sterilisation, though it cannot be adopted as a long term method may serve as a tool for the immediate future. Other methods of birth control (now in vogue) are not very effective nor suited to the conditions of the State. Intensive research to find out a quick inexpensive and reversible birth control device have to be pushed through. A

* The numbers suggested here are only arbitrary. It is expected that the effects of these measures which can remove about 10 lakhs of people from the farms together with the reductions in the numbers due to birth control measures will stabilise the density on the farm lands without allowing it to deteriorate in this decade.

reduction in birth rate can be obtained by raising by 3 to 5 years the age at marriage through legislation or placing financial burdens on early marriage.

To relieve the crowding on the farm land quickly which is the most pressing problem, these methods, which can also help a lot, are not sufficient because their results can come only slowly. Therefore a policy to encourage migration and urbanisation for the next decade is suggested. It is anticipated that by the end of this period, the adoption of family planning by large Sections of the population would be sufficiently widespread to control the present high growth rate.

6. WORKING POPULATION OF KERALA
(An Analysis of the Intercensal Change)

By
B. D. Kale, Institute of Economic Research
Dharwar-4

INTRODUCTION

Kerala presents an unusual situation necessitating a study of its workers in the total population, on account of its peculiar characteristics, such as, the highest density of population in the whole country (1127 persons per sq. mile in Kerala as against 373 for the whole of India), a faster growth rate of population than the All India average growth rate during all the decades since 1901, a very high literacy rate (46.8 per cent in Kerala as against the All India rate of about 24 per cent in 1961), and the most acute problem of unemployment as compared to other parts of the country. An examination of this subject assumes an added significance because the first two Five Year Plans are already over and we are half way through the Third Five Year Plan while the preparation of the Fourth Plan is taking its final shape.

This paper proposes to examine the increase in the number of workers and the change in the distribution of workers in different industrial categories, that has come about during the last decade.

The question of comparability of the 1951 and the 1961 figures has been discussed at length by the Census authorities and the academicians, and a satisfactory equation seems to have been established between the two sets of figures. In working out this equation, jurisdictional changes between different administrative units were not a great obstacle. But the differences in economic concepts, definitions and classifications seemed to present serious difficulties in the beginning. However, it has been agreed on all hands that the differences are more terminological than operational, and for measuring broad dimensional changes, the data are fairly serviceable.

This paper is chiefly based on the two sets of figures for the 1951 and the 1961 censuses, given in Census of India Paper No. 1 of 1962. However, certain limitations ought to be noted, while making any comparison between them.[1] Toddy drawers who are now included in industrial category III i.e., mining, plantations etc., in the 1961 census, are mixed up in the industrial category V of manufacturing etc., in the 1951 reclassified figures, because they could not be separated out having been included at that time with the other workers in processing and manufacture of beverages. To that extent, therefore, industrial category V in respect of 1951 figures has been inflated. At the same time, no estimate could be made, it has been pointed out, for persons working in household industry i.e., industrial category IV in respect of 1951 figures. These persons remain mixed up partly in industrial category III and partly

1. The following are the nine industrial categories into which all workers are classified according to the 1961 classification.

1—Cultivator.
2—Agricultural labourer.
3—Mining, Quarrying, Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and Allied activities.
4—Household Industry.
5—Manufacturing other than Household Industry.
6—Construction.
7—Trade and Commerce.
8—Transport Storage and Communications.
9—Other Services.

The 1951 figures have also been now reclassified into the above nine categories. The distribution of workers into the above nine categories for 1951 and for 1961 are both given in Census of India, Paper 1 of 1962.

in industrial category V. If the net result of the toddy drawers being included in industrial category V, and part of the household industry people being included in industrial category III is to cancel out the effect of the transfer or is to outweigh in favour of industrial category III, our analysis will not be affected. On the other hand, our reading of the situation would be further strengthened thereby. We do not think that the net result would have been to outweigh in favour of industrial category V. Even if this has happened, we feel that the outweighing effect in favour of industrial category V might have been rather insignificant and hence our analysis will still hold true. For the purposes of analysis, we have pooled together the figures for 1961 in respect of industrial categories IV and V (i.e., household industry and manufacturing other than household industry) and set them against the figure for 1951 in respect of industrial category V.

There is one more point which ought to be mentioned. It has been said that there might have been some under reporting in 1951 in respect of the number of workers, particularly in respect of the agricultural workers and more specifically the female workers in some States (not including Kerala) However, the figures in respect of the proportion of both the male and female workers to total population in 1951 and 1961 in Kerala are very close to each other, and therefore, the Kerala figures at least for 1951 may be taken to be reliable. Further, if there has been under-reporting in 1951 in Kerala also, it can not at all have been of any significant measure. To the extent that there has been any under-reporting, it would be strengthening at least some of the factors to which attention is drawn in this paper. The above mentioned point may be borne in mind while following the discussion made here.

Proportion of workers in total population and the problem of unemployment.

Out of a total population of about 135 lakhs, there were about 44 lakhs of persons engaged in different industrial categories in the year 1951. This

gave a proportion of workers to total population of the order of 32 per cent in 1951, as against the All India percentage of 39. The number of workers in Kerala rose to about 56 lakhs by 1961. The increase in the number of workers during the decade was of the order of about 12 lakhs. The number of workers had thus increased by about 29 per cent as against the increase in total population of 25 percent. Thus the proportion of workers now rose to about 33 per cent (as against the All India percentage of 43). The increase in employment during the decade did not result in any appreciable increase in the proportion of workers to the total population in Kerala. According to a survey conducted by the State Bureau of Economics and Statistics, there were 6.6 lakh persons who were openly unemployed in the year 1955-56, which meant that the percentage of overt unemployment in Kerala was of the order of 4.2 percent as against the All India percentage of 0.6. It was also brought out by the Survey that the number of under-employed in the State at that time was 15.2 lakhs, thus giving a percentage of 9.6 in the total population as against the all India percentage of 6 in respect of the under-employed. With this magnitude of the unemployed and the under-employed in the total population in 1956, the situation may not have changed much by 1961, in view of the fact the proportion of workers to total population has increased by only 1 percent during the whole decade from 1951 to 1961. The problem of unemployment, therefore, continued to be very acute in Kerala ever at the end of the Second Five Year Plan.

Incidentally, it may be pointed out that the number of persons seeking employment has been kept low on account of the comparatively high level of education in Kerala. Otherwise, the problem of unemployment would have become more acute. At the same time, however, the proportion of workers to total population would have been some what higher in the absence of larger attendance in schools and colleges, because at least some more persons would have somehow found their way into some employment field or the other. But, this would have made

the problem of under-employment assume larger proportions. Although therefore, the problem of unemployment and under-employment has been a little less acute on account of the high proportion of persons undergoing education, there is another aspect of the problem which arises at the same time. This is the problem of the educated unemployed, because the opportunities are further limited for those who successfully complete their education—say up to the S.S.C. standard. This has very serious social and political implications.

Workers in Agriculture.

It is well known that agriculture (excluding plantations) in Kerala has attained a point of saturation in respect of its employment capacity. Even after including the area under plantations and gardens, the per capita land under cultivation in Kerala, considering only the rural population, is only 0.33 acres as against 0.90 acres for the whole of India.[2] If the area under plantations and gardens is excluded, the per capita land under cultivation (considering rural population only) comes down to 0.14 acres in Kerala. Again, the per capita cultivable waste land is also negligible (0.025 acres).

The percentage increase in the number of workers in agriculture during the last decade is seen to have been of the order of 1.4 percent, as against the percentage increase in total workers of about 29 percent. Even this increase in workers in agriculture is solely on account of the increase in the number of female workers in agriculture. Indeed, there has been an absolute decline in the number of male workers in agriculture to the extent of about 5.7 per cent. The female workers on the other hand have increased by about 18.7 per cent and hence the loss in male workers has been made good and as mentioned earlier the total number of workers in agriculture has increased, although to an insignificant extent of only 1.4 percent. Since the number and proportion of female workers in agriculture has increased, it is very likely that the number of under employed persons has also increased in the agricultural sector. At

2. Land utilisation figures given in the 'Statistical Abstract of Kerala, 1959-60' and in 'India 1963' are related to the respective 1961 rural populations.

the same time, it may be said that whatever little increase in the number of workers in agriculture has taken place, the same has been possible to a certain extent on account of the extension of irrigation and other such facilities during the last decade. Otherwise, even the small increase in the number of workers in agriculture, that is now seen, may not have taken place to the same extent.

It is significant to note in respect of agricultural workers in Kerala that there has been an absolute decline in the number of landless agricultural labourers to the extent of about 12 percent. Male agricultural labourers have decreased by 27 per cent during the decade and, therefore, although the number of female agricultural labourers has increased by about 14 per cent, the net result has been in an absolute decline in the number of total agricultural labourers as stated above. It seems likely that a part of the former agricultural labourers have now become cultivators as tenants or even owners. Some of them might have now entered industrial category III which includes plantation workers etc.

Despite the absolute decline in the number of agricultural labourers, the total agricultural workers have increased during the decade by 1.4 per cent as stated earlier, and this has been solely on account of an increase in the number of cultivators which has taken place by about 16.4 per cent.

Workers in Industrial Category III.

(Mining, plantations, forestry, fishing, etc.)

Kerala is famous for its plantation and garden crops like rubber, tea, coffee, cardamom, arecanut, bananas, coconuts, cashewnuts, pepper, etc. Most of these crops have enjoyed better prices during the last decade, and the area and production of the more important of them like rubber, has definitely increased for which there seems to have been good scope also.[3]

3. According to the 'Plantation crops, A Review', Commonwealth Economic Committ, London, 1963, the area under rubber in India increased from 1,77,000 acr s in 1954 to 3,21,000 acres in 1960. Fromthe figur s giv n in the Statistical Abstract of Kerala, this State accountsfor about 95 percent of the area under rubber in India in 1960.

This seems to be the chief reason why the number in industrial category III has considerably increased during the intercensal period. The number of these workers increased by 50 per cent between 1951 and 1961. It is likely that this trend of significant increase in the number of workers of industrial category III might continue for some more time. Even as late as the year 1960, large areas in the occupation of planters were not brought under cultivation. The percentage of such area to the total area of the estates was more than 50 per cent in the case of tea and about 30 per cent in the case of rubber and coffee. It has been rightly suggested that the emphasis in Kerala should be more on plantations and other cash crops rather than on food grains, because the former are more profitable from Kerala's point of view, besides earning or saving foreign exchange for the whole country. As far as foodgrains are concerned, Kerala can get them from other parts of the country, it has been said.

Incidentally, it may be pointed out that the number of female workers has decreased in this industrial category to the extent of 6 per cent. The expansion that has taken place in this group of industries, does not, therefore, seem to have offered any new openings to the female labourers. The number of males, on the other hand, has increased substantially (73 per cent) and hence the number of total workers in the category has made appreciable advance during the last decade.

Manufacturing.

Manufacturing absorbed additional workers to the extent of about 24 per cent of the 1951 number, thus registering a lower rate of increase in workers in this category, than the rate of increase in total workers. Further, male workers in manufacturing have increased by only 20 per cent, as against the increase in female workers by 29 per cent. As far as the comparatively faster rate of increase in the female workers is concerned, it is likely that underemployment in manufacturing, particularly in the household sector, might have increased to some extent. Both the males as well as the females have

increased by a lower rate in manufacturing than the rate of increase in total male and total female workers.

During the First and Second Five Year Plans, no appreciable progress could be achieved in the large and medium industries sector. The total provision made by the State Government in the Second Plan, for instance, was of the order of Rs. 23.75 lakhs for participation in the private sector and of Rs, 78.58 lakhs in the public sector[4]. The Central Government also did not invest any amount worth consideration in any industries in Kerala. The industrial backwardness of Kerala will be obvious when it is remembered that out of the total productive capital investment of Rs. 968 crores in industries in India in 1956, the share of Kerala was only Rs. 20 crores (11th Census of Industrial Manufacturers, 1956). Further, according to the Registrar of Companies, the total number of companies registered in the State, during the Second Plan period is 151 with a total issued capital of Rs. 2.53 crores, including the amount subscribed for in the shares of these companies by the State and Central Governments. Most of these companies, have been small and tiny, involving not much of investment. Under all the circumstances sketched above, not much additional employment could be expected to have been provided by the large and medium scale industries, during the last decade.

Indeed the overwhelming bulk of employment in the manufacturing sector in Kerala is provided by the village industries sector including the coir industry. The substantial portion of the additional workers who entered the manufacturing sector during the last decade must have been absorbed by these industries only, thus possibly accentuating at the same time the problem of under-employment in them.

The small role played by the State in the total industrial sector of Kerala during the last decade would be clear from the fact that the actual out-lay in the First Plan on Industry and Mining (not including Power) was just 65 lakhs (or 1.9 per cent

4. Data on investment in industries etc., is taken from the 'Third Five Year Plan of Kerala—Draft Outline' and the 'Statistical Abstract of Kerala, 1959-60'.

of the total plan expenditure) and the Plan outlay on the same items under the Second Plan was 684 lakhs (or 7.9 percent of the total Plan outlay). Most of the Second Plan expenditure on industry was incurred to encourage or rehabilitate the Small and Village Industries, which could, therefore, continue to hold their ground and provide some additional employment. But on the whole, the State could not do much to expand the employment potential of the industrial sector during the last decade. As far as the private sector is concerned, low capital formation in the State on account of its low income, which is lower than the All India level that itself is very low, has been the major obstacle. (comparison is based on the per capita incomes). Further, the political instability in the State during the past decade seems to have scared away the prospective industrialists from making their investments in Kerala. In short, the industrial sector could not make much headway in the last decade, and hence, could not provide any considerable additional employment during the period.

Construction, Commerce and Transport etc.

The number of workers in industrial categories VI, VII and VIII i.e., in constructon, trade and commerces and transport, storage and communications increased very moderately during the intercensal period. The increase in number of workers registered by the three categories was to the extent of 7 percent, 11 per cent and 110 per cent respectively. These rates have been considerably lower than the rate of increase in total workers which was 29 per cent. as mentioned earlier. In other words, this portion of the tertiary sector increased rather in a sluggish manner. It is interesting to note that the number of female workers in all these three categories has actually decreased which is rather intriguing. The number of female workers in all these three categories has always been very small as compared to the number of female workers engaged in other industrial groups. The total number of female workers by which the three industrial categories have lost their female labour comes to about 50,000. Since the

number of male workers in all these categories has increased, the net results has been towards an addition in the total workers belonging to these three groups, although by a smaller magnitude as already stated above. It may be noted here that these three industrial categories have rather an insignificant role in the total employment picture and hence the little addition which has taken place in the total workers employed by them may be taken to have had almost no effect in giving relief to the problem of unemployment.

Other services.

The most outstanding feature brought out by the figures of the two Censuses is the gigantic increase in the number of workers in 'other services' like public employment (other than that which comes under other categories viz., industry, transport etc.), education, health, catering services, domestic servants, lawyers etc. As against 6 lakhs persons engaged in these services in 1951, there were about 14 lakhs workers absorbed in them in 1961. The additional number taken in by these services during the last decade was, therefore, of an order of 8 lakhs, thus registering a stupendous rate of increase of about 136 per cent over the 1951 figures. The same feature is brought out, if we note that 65 per cent of the total number of additional workers (in all industrial categories together) were observed in the 'other services' as against about 2 per cent in agriculture, 13 per cent in plantations etc., about 16 per cent in manufacturing and about 4 per cent in construction, commerce and transport groups together.

As already stated earlier, agriculture (excluding plantations etc.) in Kerala has absolutely no scope to admit more workers. The manufacturing sector did not show satisfatcory growth during the last decade. Construction, commerce and transport groups also grew only in a sluggish manner. This is possibly because in some of these sectors, like the road transport on some routes, there had been good development even earlier.

There remained, therefore, only two sectors in which the additional workers would find substantial

scope for entry viz., industrial category III of plantations etc., and industrial category IX of 'other services'. The reasons for the substantial increase in the number of workers in plantations etc., have already been indicated earlier. In other services, firstly, it appears that there has been a substantial expansion in the educational sector. For example, the number of students in the schools increased more than the double between 1951-1961.[5] This is not to say that the number of teachers also must have doubled. Yet, their number might have increased significantly. Also, the conversion of ordinary schools into multipurpose and basic schools might have contributed towards raising the teacher-student ratio. Secondly, the number of persons in public employment must have risen substantially both on account of the formation of the new State and also the developmental needs. Finally, and this is most important of all, it seems very likely that there has been a substantial expansion in the catering and many personal services. The sheer growth of population would need more of these persons of certain categories at least. The growth of cash crops and of plantation and similar labour which receives cash payment seems to have encouraged these services to a great extent. It may be recalled that the plantation sector has substantially increased during the last decade. Further, it may be noted that Kerala has comparatively better road services and road traffic, reaching almost a point of saturation on certain routes[6]. Kerala has also a different pattern of rural settlements wherein houses are not found in clusters but are spread out along the road continuously for miles together. These factors must have also helped the growth of 'other services' to a much larger extent than elsewhere.

It is interesting to note in this connection that the catering industry is found most widespread in Kerala, as compared to the whole country, according to the 1961 Census. There were in 1961 about 3.8 hotels, resthouses, restaurants, sweetmeat shops,

5 Third Five Year Plan of Kerala, Draft Outline, p. 18.

6. Techno Economic Survey of Kerala, N.C.A.E.R., p. 260.

eating places etc., for every 1,000 persons in Kerala.[7] The corresponding figure for the whole of India was 0.9. Out of every 1,000 occupied 'census houses' in Kerala, in about 21 were found hotels, resthouses, restaurants, sweetmeat shops, eating places, etc. The corresponding figure for the whole country was 4. Indeed about one sixth of all hotels, restaurants, etc., in the whole country are located in Kerala alone. These figures should give an idea about the extent of catering industry in Kerala as compared to the whole of India. We have to remain contented with these figures only, since a detailed break up of actual employment provided by different fields of activity are not yet available.

This example has been cited, by way of illustration, to show how the 'other services' have a larger share in total employment in Kerala.

It must be noted, however, that the people seem to have been forced into the 'other services' because they have nothing else to do in any other sectors. Doors are closed to them in other fields of employment and hence they are compelled to take to 'other services'. In other words, the growth of 'other services' has not been the result of any growth in other sectors as such. Rather, it is the lack of growth in other lines, which seems to have developed 'other services'.

The phenomenal increase in 'other services' which has taken place under the circumstances described above, might even imply the disguised unemployment in the State, and under employment in 'other services' also along with certain other categories.

Structural changes in the distribution of workers during the intercensal period.

On account of the differential rate of increase in the number of workers in the various industrial categories during the last decade, significant structural change has taken place in the distribution of

7. These figures have been worked out on the basis of the Housing and Establishingments Tables presented in Census of India, 1961, Vo. I, Part IV(B), and the occupation figures given in Census of India, Paper No. 1 of 1962. The figures are worked out exclusive of Goa, Diu, Daman and NEFA.

workers between 1951 and 1961. The proportion of agricultural workers to total workers decreased from about 49 percent in 1951 to about 38 percent in 1961. It is interesting to note that on the All India level, this proportion has practically remained at the same level of about 70 percent. The proportion of cultivators as such to total workers is seen to have decreased in Kerala from 23 percent to 21 percent. In the country as a whole, on the other hand, the proportion of cultivators increased from 50 percent to 53 percent. If the agricultural labourers only are considered, their proportion to total workers in Kerala decreased from about 25 percent in 1951 to 17 percent in 1961. This is a sharper decline than for the whole of India, where the proportion is seen to have decreased from about 20 percent to 17 percent.

The proportion of workers in industrial category III viz., plantations etc., increased from 7.4 percent in 1951 to 8.7 percent in 1961. On the All India level, however, this proportion has registered a decline though slightly, from 3 percent to 2.7 percent. This again speaks about the importance of the industrial category III in the economy of Kerala.

The proportion of workers in manufacturing has come down in Kerala from 18.8 percent in 1951 to 18.0 percent in 1961. For the whole of India, however, the proportion of workers in manufacturing has gone up from 9 percent in 1951 to 10.6 percent in 1961. Incidentally, it may be noted here that the proportion of workers in manufacturing is much higher in Kerala than the All India average, on account of its large cottage industry sector which includes the coir industry.

The proportion of workers in construction, commerce and the transport groups together, was 11.3 percent in 1951. It came down to 9.7 in 1961. The All India proportion came down during the same period from 7.8 percent to 6.7. It may be noted that at both points of time, the proportion of workers in these industrial categories in Kerala has remained much higher than the All India level.

Finally, the proportion of workers in 'other services' to total workers was 13.8 percent in 1951 in Kerala. The same has now taken a big jump to 25.3 percent. In other words, as per 1961 census, one in every four workers in Kerala is engaged in 'other services'. The All India proportion in this case has actually declined though nominally from 10.5 percent to 10.4 percent during the the same period.

It should be clear, therefore, that there has been a shift in favour of the industrial category IX of 'other services' and the industrial category III of plantations, orchards, etc., and against all other categories in Kerala during the last decade. The 'other services' have gained substantially and agriculture has lost its ground to a great extent.

Conclusion.

The growth of 'other services' in Kerala on a stupendous scale as described above, does not seem to be a healthy trend. If these services were to grow on the strength of outside patronage like tourism etc., it would not have mattered much. But this does not seem to be the case. As such, it does not seem desirable for a larger and larger proportion of the population to be absorbed in other services which means that all these people have to be sustained by the goods produced by a comparatively smaller proportion of the population. It may be noted that this state of affairs assumes significance particularly in a poor economy in which it disturbs the balance between its different sectors. However, if the rate of growth of production as such, in other sectors, such as agriculture and industry is quite substantial, it would not matter very much, if the proportion of workers in 'other services' also increases at the same time. For, in the ultimate analysis, it may be granted that it is not the proportion of workers that is important but the volume of production and the rate of growth of production of commodities that is really important.

Agriculture has already attained the point of saturation in respect of its employment potential.

The two sectors which, therefore, deserve the utmost emphasis in Kerala are the industrial category III and the industrial categories IV and V. That there is good scope for growth of plantations is already pointed out earlier. It can absorb a large number of additional workers also. Secondly, the industrial sector seems to have so far received only scant attention, particularly in the first two plans of the State. This has already been pointed out earlier. We would, therefore, urge that industries should receive a much higher priority in terms of the percentage of plan outlay than what it received in the earlier plans. In the First Plan, industry and mining (excluding power) was allocated only about 2 percent of the actual outlay as against 13.2 percent for the Social Services. In the Second Plan, the respective percentages were 7.9 and 27.4 of the plan outlay. By now, it may be said that the level of social services has been considerably raised, though not to the utmost satisfaction of all sections of the population. The level should not only be maintained but should be raised still further. The absolute amount of money to be allocated for the social services will, therefore, have to be more than heretofore. But we would certainly urge that the proportion of the total outlay for industries and allied subjects should be considerably increased without which, it would not be possible to bring about a speedier growth of the manufacturing sector. Indeed, this seems to be the urgent need of the hour in Kerala.

List of tables.

1. Decennial Rate of increase in Population and Workers in various industrial categories in Kerala (1951-1961).
2. Percentage distribution of Intercensal Additional Workers in different Industrial Categories in Kerala, 1951-1961.
3. Proportion of total workers to Total Population in Kerala and India, 1951, 1961.
4. Percentage distribution of workers of each Sex into different Industrial Categories, Kerala and India, 1951, 1961.

Table No. I

Decennial Rate of Increase in Population and Workers in Various Industrial Categorie in Kerala (1951—1961)

Category	1961	1951	Variation	Percentage Variation
(1)	(2)	(3)	(4)	(5)
1. *Population*				
Persons	16,903,715	13,549,118	3,354,399	24.76
Males	8,361,927	6,681,901	1,680,026	25.14
Females	8,541,788	6,867,217	1,674,571	24.38
2. *Total workers*				
P.	5,630,333	4,372,948	1,257,385	28.75
M.	3,947,038	3,117,636	427,983	26.60
F.	1,683,295	1,255,312	427,983	34.90
3. Cultivators				
P.	1,178,103	1,012,308	165,795	16.37
M.	904,502	798,652	105,850	13.25
F.	273,601	213,656	59,945	28.05
4. *Agricultural Labourers*				
P.	978,396	1,114,783	—136,387	—12.25
M.	516,914	709,392	—192,478	—27.13
F.	461,482	405,391	56,091	13.83
5. *Total Agricultural Workers*				
P.	2,156,499	2,127,091	29,408	1.38
M.	1,421,416	1,508,044	—86,628	—5.74
F.	735,083	619,047	116,036	18.74
6. *Forestry, Fishing, plantations, etc.*				
P.	487,359	324,912	162,447	49.99
M.	398,622	230,465	168,157	72.96
F.	88,737	94,447	—5,710	—6.04
7. *Household Industries & Manufacturing Other than Household Industries*				
P.	1018,034	823,142	194,892	23.67
M.	581,604	484,703	96,901	19.99
F.	436,430	338,439	97,991	28.96
8. *Construction*				
P.	70,702	65,890	4,812	7.30
M.	67,664	61,445	6,219	10.12
F.	3,038	4,445	—1,407	—31.65
9. *Trade & Commerce*				
P.	321,933	289,214	23,717	11.31
M.	298,218	263,105	35,113	13.34
F.	23,715	26,109	—2,394	—9.16
10. *Transport, Storage & Communication*				
P.	152,513	138,965	13,548	9.75
M.	144,913	130,028	14,885	11.44
F.	7,600	8,987	—1,337	—14.96
11. *Other Services*				
P.	1,423 293	603,734	819,559	135.74
M	1,034,601	439,846	594,755	135.21
F.	388,692	163,888	224,804	137.16
12. *Non-Workers*				
P.	11,273,382	9,176,170	2,097,212	22.85
M.	4,414,889	3,564,265	850,624	23.86
F.	6,858,493	5,611,905	1,246,588	22.21

Source : Figures taken from Census of India, Paper No. 1 of 1962.

Table No. 2

ercentage Distribution of Intercensal Additional Workers in Different Industrial Categories in Kerala, 1951—1961.

Category	*Persons*	*Males*	*Females*
(1)	(2)	(3)	(4)
1. Cultivators	165,795 (13.18)	105,850 (12.76)	59,945 (14.01)
2. Agricultural Labourers	—136,387 —(10.84)	—192,478 —(23.19)	56,091 (13.11
3. Total Agricultural Workers	29,408 (2.34)	—86,628 —(10.43)	116,036 (27.11)
4. Mining, Forestry, Fishing, Plantations, etc.	162,447 (12.92)	168,157 (20.27)	—5,710 —(1.34)
5. Household Industry and Manufacturing other than Household Industry	194,692 (15.50)	96,901 (11.68	97,991 (22.90)
6. Construction	4,812 (0.38)	6,219 (0.75)	—1,407 —(0.33)
7. Trade and Commerce	32,719 (2.60)	35,113 (4.24)	—2,394 —(0.56)
8. Transport, Storage and Communications	13,548 (1.06)	14,885 (1.80)	—1 337 (0.31
9. Other Services	819,559 (65.20)	594,755 (71.69)	224,804 (52.53)
10. Total Workers	1,257,385 (100%)	829,402 (100%)	427,983 (100%)

Figures in brackets are percentages to column totals given in row 10.

Source: Figures taken from Census of India, Paper No. I of 1962.

Table No. 3

Proportion of total Workers to total Population in Kerala and India, 1951, 1961

Category	*Kerala*			*India*		
	Persons	*Males*	*Females*	*Persons*	*Males*	*Females*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
		1951				
(a) Population	13,549,118	6,681,901	6,867,217	356,879,394	183,330,538	173,548,856
(b) Workers	4,372,948 (32.28)	3,117,636 (46.66)	1,255,312 (18.28)	139,521,180 (39.10)	99,082,627 (54.05)	40,438,553 (23.30)
		1961				
(a) Population	16,903,715	8,361,927	8,541,788	438,310,251	225,843,567	212,466,684
(b) Workers	5,630,333 (33.31)	3,947,038 (47.20)	1,683,295 (19.71)	188,417,362 (42.98)	129,015,653 (57.12)	59,401,709 (27.96)

Figures in brackets refer to the percentages of workers to total population, given in row 'a'

Source: Census of India—Paper No. 1 of 1962.

Table No. 4

Percentage distribution of Workers of each Sex into differnet Industrial Categories, Kerala and India, 1951, 1961

Category	*Kerala*						*India*					
	1951			1961			1951			1961		
	P	*M*	*F*	*P*	*M*	*F*	*P*	*M*	*F*	*P*	*M*	*F*
(1) Cultivators	23.2	25.6	17.0	20.9	22.9	10.3	50.0	51.9	45.4	52.8	51.4	55.7
(2) Agricultural Labourers	25.5	22.7	32.3	17.4	13.1	27.4	19.7	15.0	31.4	16.7	13.4	23.9
(3) Mining, fishing, plantations etc.	7.4	7.4	7.5	8.7	10.1	5.3	3.0	2.8	3.4	2.7	3.1	2.0
(4) Manufacturing including Household Industries	18.8	15.6	27.0	18.1	14.7	25.9	9.0	9.8	6.9	10.6	11.3	9.2
(5) Construction	1.5	2.0	0.3	1.3	1.7	0.2	1.1	1.2	0.7	1.1	1.4	0.4
(6) Trade and Commerce	6.6	8.4	2.1	5.7	7.6	1.4	5.2	6.2	2.9	4.1	5.3	1.4
(7) Transport, etc.	3.2	4.2	0.7	2.7	3.7	0.4	1.5	2.0	0.3	1.6	2.3	0.1
(8) Other Services	13.8	14.1	13.1	25.2	26.2	23.1	10.5	11.1	9.0	10.4	11.8	7.3
(9) Total Workers	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Census of India, Paper No. 1 of 1962

P—Persons; M—Males; F—Females.

7. ECONOMIC—DEMOGRAPHIC CHARACTERISTICS OF TRIVANDRUM CITY

By

K. BALAKUMARAN NAIR,
Economist, Department of Town Planning, Trivandrum.

Introduction.

Planning in India has become an established concept and policy, ever since the attainment of independence. With the advent of the Five Year Plans, the country has become planning conscious. Economic development plans have necessarily initiated physical development of urban and rural areas. Planned development, if it is to be realistic and successful, has necessarily to take into account the demographic aspects of the city for which plans are drawn up, the objective being to provide a physical environment in which everyone, both as individual and as a member of the community, is enabled to live a full and healthy life.

The overall development of any particular area and its people depends primarily on the development of economic and social overheads, which have to be worked out in relation to, among other factors, the total population and its various aspects existing at present and likely to exist in future. It is therefore imperative to have a thorough study of the character and composition of the present population of the area selected since it serves two main purposes. In the first instance short-term plans can be formulated on the basis of such an analysis to meet the immediate needs and secondly the present character and composition of the population form the basis upon which meaningful projections of populations can be made. Further, a knowledge of the growth, distribution, composition and other demographic characteristics constitute the basis for long range planning. Population studies thus give the clue for the requirements in respect of various land uses and their appropriate location for serving the population of the area most efficiently.

An attempt is made in this paper to bring together some of the important demographic aspects of the city of Trivandrum that may help in taking decisions regarding the future pattern of development of the city. However, it is to be noted that this paper is subject to the possible limitations and shortcomings on account of paucity of data. Data available from various sources (for periods close to 1961 census) have been linked together and presented here. The source of data is mainly the Census of 1961 supplemented by published and unpublished reports mainly of the Bureau of Economics and Statistics and the Department of Town Planning of the State.

The City of Trivandrum.

Trivandrum, one of the historic Cities of South India has grown in importance by combination of circumstances. It was the capital of the erst-while princely State of Travancore and later of the former Travancore-Cochin State of the Indian Republic. It still continues as the Capital of the reorganised State of Kerala. It is thus the seat of the State Government, besides being the seat of the University of Kerala and a place of pilgrimage. But from an economic point of view, the dominant trait of the city is its non-industrial and non-commercial character.

Area.

Trivandrum City comprised an area of about 17 sq. miles at the time of the last two decennial censuses. Trivandrum, formerly a town with an area of 11.29 sq. miles in 1931 gradually attained the status of a city in 1941 covering an area of 11.84 sq. miles. Since 1941, the city limits were extended and during 1951 census period it had an area of 17 sq. miles which nevertheless remained stationary till 1962. In 1963 the area was increased to 28.9 sq. miles.

Population.

Occupying nearly 2 per cent of the total area of Trivandrum District, it accounts for nearly 14 per cent of the district population as per 1961 census.

The City's population which stood at 1.87 lakhs in 1951 has reached 2.40 lakhs in 1961 and thus recorded an increase of nearly 28 per cent over the decade 1951-61, as against the increase of 31 per cent in the district population during the same decade.

TABLE—1.1

Area, population and density of Trivandrum compared to the State and Trivandrum District*

	Area Sq. Miles	*Population*	*%age increase in 1961 over 1951*	*Density of population per Sq. mile 1961 census*
Trivandrum City	17.19	2,39,815	28.34	13,951
Trivandrum District	843.91	17,44,531	31.38	2,059
Kerala State	15,002.03	1,69,03,715	24.76	1,127
All India	11,78,995.00	43,92,35,000	21.50	373

* *Sources*: 1. Paper No. I Final population totals 1961 census — Manager of Publications, Delhi 1963.

2. Quarterly Bulletin, Bureau of Economics and Statistics for the quarter ending June 1962.

As seen from the above table, the rate of population growth in the city is more than that of the State as a whole and lower than that of the District population.

The sub-joined table indicates that the city accounts for more than 66 per cent of the urban population of Trivandrum Taluk, 53 per cent of the urban population of the District and 9 per cent of the urban population of the State.

TABLE—1.2

Rural-urban break up of the population*

	1961 *Population in lakhs*			1951 *census population in lakhs*		
	Total	*Rural*	*Urban*	*Total*	*Rural*	*Urban*
Trivandrum City	2.39	..	2.39	1.87	..	1.87
Trivandrum Taluk	5.72	2.12	3.60	3.71	1.74	1.97
Trivandrum Dist.	17.44	12.96	4.48	@21.54	16.31	5.23
Kerala State	169.04	143.50	25.54	+135.52	117.67	17.85
India	4,392.35	..	..	3,569.00	2,950.00	619.00

@Former Trivandrum District of the T-C State.

+Estimated population as per 1951 census for the present area of Kerala State.

*Sources 1. Quarterly Bullettin of the Bureau of Economics & Statistics for the quarter ended June 1962.

2. 1951 District Census Handbook for Trivandrum District.

It is seen from the table that the urban population of Trivandrum Taluk is greater than the rural population both according to 1951 and 1961 censuses. Thus the urban population growth of the Taluk is presumably due to the position of Trivandrum City as the Capital of the State. But when compared to other important cities of India, Trivandrum is the least populated city while it leads all other southern cities of India in respect of population growth during the last decade.

The table 1.3 given below explains the position.

TABLE—1.3

Population and rate of growth of cities of India hav ng more than 50,0 00 people

Name of State	*Name of city*	*Population in 1961 (Lakhs)*	*Rank in population*	*Population variation 1951-61 (lakhs)*	*Rate of population growth (%)*
Maharashtra	Bombay	41.52	1	+11.58	39
West Bengal	Calcutta	29.27	2	+2.29	9
Delhi	Delhi	20.62	3	+9.42	84
Madras	Madras	17.29	4	+3.13	22
Gujarat	Ahamadabad	11.50	5	+3.13	37
Andhra Pradesh	Hyderabad	9.31	6	+0.71	8
Mysore	Bangalore	9.05	7	+1.27	16
Uttar Pradesh	Kanpur	8.95	8	+2.46	38
Do.	Lucknow	5.95	11	+1.51	34
Do.	Agra	4.62	12	+1.28	38
Do.	Allahabad	4.12	13	+1.00	32
Maharashtra	Nagpore	6.44	9	+1.95	43
Do.	Poona	5.98	10	+1.17	24
Madhya Pradesh	Indore	3.95	14	+1.10	39
Bihar	Patna	3.63	15	+0.80	28
Kerala	Trivandrum	2.40	16	+0.53	28

Source: Final population total—Paper No. I 1961 Census, Manager of Publication Delhi 1963.

It is also seen that the city has a higher percentage growth of population than that of Calcutta and Poona cities.

Density.

The following table gives the area, population and density of the city from 1931 to 1991. The figures on population for 1971-91 have been obtained by projecting the 1961 population using the compound interest law.

TABLE—1.4

Density of Population

Year	*Area in Sq. miles*	*Population*	*Percentage decennial growth*	*Density of population per sq. mile*
1931	11.29	96,016	31.93	8,505
1941	11.84	128,365	33.69	10,841
1951	17.00	186,936	45.62	10,996
1961	17.19	239,815	28.34	13,951
1971	17.19	306,963	28.34	17,857
1981	17.19	385,704	28.34	22,321
1991	17.19	503,612	28.34	29,303

Source: Census Reports of 1931, 1941, 1951 and 1961

It is seen that the density of population is increasing at a rapid rate and it may be about 29,300 by 1991 provided the area and rate of population growth of the city remain the same, with the result the city may have to face the acute problem of demographic pressure.

The following table gives the area, population and density of population in the 12 major towns of Kerala as per 1961 census, arranged according to area.

TABLE—1.5

Area, population and density of population of the important towns and cities of Kerala (1961 Census)

Name of Town/City	*Area in Sq. miles*	*Rank in area*	*Population 1961 census*	*Rank in population*	*Density of population per sq. mile*	*Rank in density*
Trivandrum City	17.19	1	239,815	1	13,951	6
Alleppey	12.50	2	138,834	3	11,111	8
Kozhikode	11.82	3	192,521	2	16,288	3
Ernakulam	10.88	4	117,253	4	10,776	10
Palghat	10.27	5	77,620	7	7,558	12
Quilon	6.31	6	91,018	5	11,255	7
Kottayam	6.00	7	52,695	9	8,781	11
Trichur	4.89	8	73,038	8	14,936	4
Cannanore	4.18	9	46,101	10	11,029	9
Tellicherry	3.01	10	44,763	11	14,838	5
Mattancherry	2.69	11	83,896	6	31,188	2
Fort Cochin	1.08	12	35,076	12	32,478	1

Source: Quarterly Bulletin of the Bureau of Economics and Statistics for the quarter ended June 1962.

It will be observed from the table that the city ranks first in respect of area and population. With regard to density of population, it occupies only the

sixth place. The density of population is comparatively low and the distribution is sparse in most of the elevated residential areas of the city. The figure is less than 9 persons per acre in the north-east portion of the city. The central area of the city nestling around the Railway station, Government offices, Education and Medical Institutions have got higher densities going upto 109 per acre (0.0016 sq. miles).

The uneven distribution of population in the various wards highlights the urgency of proper planning of the city with a view to reducing the heavy concentration of population in some of the wards and also redensifying the very low density areas of the city.

The future population of the City.

In order to assess the prospective needs of the future population of the city in relation to the threefold necessities of urban life namely, Sanitation, Convenience and Amenities, it is of importance to know the magnitude of population in the next twenty or thirty years. Assuming the 1951-61 growth rate to continue, the city's population will grow from 2.4 lakhs in 1961 to nearly five lakhs in 1991.

Year	*Trivandrum city population (in lakhs)*	
1951	1.87	(Actual)
1961	2.40	„
1971	3.07	(Estimated)
1981	3.93	„
1991	5.06	„

Assuming a gross density of 30-35 persons per acre, the area required to house the projected population works out to 22-25 sq. miles. Bearing in mind that the present area of the city is 28.9 sq. miles, suitable steps will have to be taken for a redistribution of the population and for the proper land use of the city so as to ensure adequate amenities and utility services essential for a healthy and decent life of the citizens, which being beyond the scope of this paper, are not considered here. According to the present rate of growth, the population of the city will double itself in a period less than thirty years.

Age and Sex Composition.

The age and sex composition of the population have an intimate bearing on the economic, social and political status.

Data on sex of the population derived in 1961 census and in other household sample surveys conducted in the city more or less during the same period differ widely. According to 1961 census, the sex ratio of the city is 96 while the sample household surveys conducted in the city by the Department of Statistics (Family Planning Survey of the City) in 1959-60 and by the Department of Town Planning in 1961-62 (Socio-Economic Survey of the city) have put the sex ratio (females per 100 males) of the city as 106.5 and 103 respectively. In this connection it is necessary to bear in mind the differences in the coverage of the population both in the actual conduct of census and sample household surveys. Census takes into account all population irrespective of its floating or stationary nature whereas the household survey considers only the house-hold population. The sex ratio obtained in the household surveys of the city corresponds with that of the sex ratio estimated for cities with population less than three lakhs in the National Sample Survey. In the publication "The National Sample Survey" (9th, 11th, 12th and 13th rounds) issued by the Government of India it is stated that the sex ratio estimated for cities with less than 3 lakhs population on the basis of sample household surveys is 108 while it is 112 for all India urban. And so it can be established that a higher proportion of females is noticed when only households of the city are enumerated. The institutional population of the city consists of 7744 males and 2656 females as per 1961 census. In the light of the above it may be inferred that the sex ratio of the city when only households are considered, is between 103 to 108 and that the sex ratio of the city as a whole is 96, the figure obtained in the 1961 census.

As per the 1961 census, the city has its sex ratio slightly below par while in all other Indian cities notably the South-Indian cities namely, Hyderabad, Bangalore and Madras, the sex ratio drops much

below 961 for 1000 males. The relative position of the city of Trivandrum regarding its sex ratio will be understood at a glance from the following table 2.1.

TABLE—2.1

Sex ratios of important cities in India

Name of the city	*Females per 1000 males (Sex ratio)*
Bombay	663
Calcutta	612
Delhi	788
Madras	901
Ahamadabad	805
Bangalore	873
Mysore	744
Poona	884
Lucknow	805
Agra	836
Allahabad	791
Patna	853
Trivandrum	961
All India (Rural and Urban)	941

Source: Paper No. I OP. Cit.

The sex ratio of the city compares favourably with India's sex-ratio of 941. But it is far lower than that of the District of Trivandrum (1067) and of the State (1022). From 1901 to 1951 an upward trend is visible in the sex ratio of the State's population. It was 1019 in 1931; 1024 in 1941 and 1028 in 1951. In 1961 it had fallen to 1022. The sex ratio of the city as indicated in the following table 2.2, also shows a rising trend from 1931 to 1941; while registering a slight decline in 1951, it recorded a small increase in 1961.

TABLE—2.2

Sex ratios of Trivandrum city from 1931 to 1961

Year	*Persons*	*Males*	*Females*	*Sex ratio*
1931	96,016	49,392	46,624	944.2
1941	128,365	65,644	62,721	955.4
1951	186,931	95,632	91,229	954.5
1961	239,815	122,318	117,497	960.5

Source: 1. Paper No. I OP. Cit.

2. Census reports for 1931, 1941 & 1951

The sub-joined table 2.3 shows the sex-wise population of the city and other important towns in Kerala State.

TABLE—2.3

Sex wise population of important towns of Ker.

City/Town	*Males*	*Females*	*Total*
Trivandrum	122,318	117,497	239,815
Kozhikode	97,911	94,610	192,521
Alleppey	69,977	68,857	138,834
Ernakulam	60,271	56,982	117,253
Palghat	38,815	38,807	77,620
Quilon	46,807	44,211	91,018
Kottayam	26,850	25,835	52,685
Trichur	36,305	36,733	73,038
Cannanore	23,185	22,916	46,101
Tellicherry	21,899	22,864	44,763
Mattancherry	42,671	41,225	83,896
Fort-Cochin	17,488	17,588	35,076

Source: Quarterly Bulletin of Bureau of Economics & Statistics June 1962.

It will be observed from the above table that males preponderate in all the towns|cities except Trichur, Tellicherry and Fort-Cochin. This only reveals that a higher proportion of males constitute the floating population of the City.

The age composition of the city's household population when correlated with its sex composition highlights some of the reasons for a higher sex ratio and also of the various aspects of planning for the different phases of the life of an individual. The age composition of a population is an important indicator of the quality of the available man-power. Historically it has been observed that in countries in their early stages of economic development there is a higher proportion or cnildren. Trivandrum city too is no exception. Children of 14 years and under formed about 40 per cent of its population as against 41 per cent of the State's population as per 1961 census. In the economic sense, they are all dependents and they will continue to be a heavy burden on the earners. Increasing numbers in the lower age groups call for increased investment in economic and social overheads so as to provide additional and adequate facilities like education, housing, public health services and other public utilities.

The following table gives the percentage distribution of the population of the city.

TABLE—2.4

Percentage distribution of population in the city of Trivandrum

Age group	*Trivandrun city**				*All India*** Total*	
	Males	*Females*	*Total*			
0—4	10	9	9.50		13.5	
5—14	31	30	30.50	40.0	24.8	38.3
15—24	18	21	19.50		17.4	
25—34	15	16	15.50		15.6	
35—44	12	10	11.00		11.9	
45—54	8	7	7.50	53.50	8.5	53.4
55—64	5	4	4.50		5.1	
65 & Above	1	3	2.00	6.50	3.2	8.3
Total	100	100	100.00	100.00	100.00	100.0

Source: * Report on the Socio-Economic Survey of Trivandrum City, 1961-62 by the Department of Town Planning

** Report on the draft master Plan of Delhi (1951 census)

The proportion of the population in the most active age group 15 to 54 is 53.5 per cent in Trivandrum and the corresponding figure in respect of all India as per 1951 census is 53.4 per cent. The two distributions irrespective of the period of reference show fairly similar patterns. Young men and women in the age group 15-34 make up 35 per cent of the city's population while they form 33 per cent of All India population. The higher proportion in the younger working groups is mainly due to the attractions of the city as the capital of the State and as an important education centre. The pattern of migration is also responsible for the divergence from equality of the ratio between the sexes. Trivandrum, unlike many other Indian cities presents the phenomenon that females outnumber males in many parts of the city eventhough the sex ratio for the city as a whole is 961 per 1000 males and this unequal sex ratio is especially pronounced among the population in the working ages of 15-24 and 25-34. This is perhaps due to the large proportion of males of the working age groups (15-34) migrating to industrial and commercial areas of the State and outside in search of employment and better employment.

Migration.

The migratory pattern that will prevail to influence the size of the population of any given area is to be studied for planning any developmental activities. According to the family planning household survey conducted in the city by the Demographic Research Centre, Trivandrum in 1959, more than 55% of the population are non-migrants. Among the migrants more persons belong to the State itself and have migrated into the city.

The Socio-Economic Survey conducted in Trivandrum city by the Department of Town Planning in 1962 indicates that 91.4 per cent of the city's population are born in Trivandrum District, 1.7 per cent in Quilon District, 1.1 per cent in Kottayam District, 1.4 per cent in Alleppey District, 0.4 per cent each in Ernakulam and Trichur Districts, 0.1 per cent in Palghat District and 3.1 per cent outside Kerala State. It can be said therefore that migration to the city from other parts of the State is higher than from outside. Table 3.1 brings out the percentage distribution of persons by sex, type and reason of migration in respect of the city as per the Family Planning Survey.

Broadly the reasons for migration can be classified into two groups, voluntary and sequential. There is some element of contractual or customary obligations and suggestions of compelling circumstances in the latter category. Persons falling in the former group on the other hand, have the opportunity to exercise their own discretion in deciding whether to migrate or in the matter of selecting the place of migration. Table 3.1 reveals that 64 per cent of the male migrants have migrated into the city as against 47 per cent of female migrants during the reference period due to voluntary reasons. Movements incident to sequential reasons claimed 53 per cent of female migrants while the corresponding figure for the male migrants is 36. Being an important centre of higher education in the State, a considerable number of migrants have come to the city for studies. Male migrants who have migrated into the city for

studies constitute 25 per cent as against 19 per cent of female migrants. Comparatively greater percentage of persons migrated from rural areas of the State in search of employment, etc.

(Please see Table 3.1)

Household size.

Data on the size and composition of households is useful in making provision for housing of various types, related facilities and institutions suitable for the citizens. It is seen that nearly 56 per cent of households have between 4 and 7 members (see table 4.1). The composition of households according to income and religion is given in table 4.2 The average household size in the city is 6.

TABLE—4.1

Household size (No. of members in the household	*Percentage of househod in the city*
Between 1 and 3	16.6
Between 4 and 7	55.9
8 and above	27.5
Total	100.0

Source:—The Socio-Economic Survey of the City in 1962 by the Department of Town Planning.

TABLE—3.1

Migration Particulars of Trivandrum City*

Type of migration	*Sex*	*Reasons for migration*					*Total*	*Sample Number*
		Voluntary reasons		*Sequential reasons*				
		In search of employment	*In search of better employment*	*Other economic reasons*	*For studies*	*Others*		
1	2	3	4	5	6	7	8	9
From rural areas of the State	Male	16.19	3.49	17.12	24.07	39.13	100.00	1191
	Female	1.91	0.49	22.45	19.03	56.12	100.00	1264
	Total	8.73	1.92	19.91	21.44	48.00	100.00	2455
From urban areas of the State	Male	5.95	2.78	40.53	25.18	25.56	100.00	414
	Female	1.50	1.09	38.79	17.42	41.20	100.00	485
	Total	3.62	1.90	39.62	21.12	33.74	100.00	899
From rural areas outside the State	Male	7.87	4.65	6.35	23.10	58.03	100.00	44
	Female	1.39	0.51	16.50	10.36	71.24	100.00	47
	Total	4.39	2.43	11.79	16.26	65.13	100.00	91
From urban areas outside the State	Male	9.39	0.36	19.39	35.43	35.43	100.00	67
	Female	1.01	..	6.43	36.56	56.00	100.00	80
	Total	4.92	0.17	12.48	36.04	46.39	100.00	147
Total migrants	Male	13.37	3.25	22.28	24.72	36.38	100.00	1716
	Female	1.77	0.61	25.41	19.09	53.12	100.00	1876
	Total	7.30	1.87	23.92	21.78	45.13	100.00	..
Sample Number		240	58	852	938	150	..	3592

*Source: Report on Family Planning Survey conducted in Trivandrum city by the Demographic Research Centre, Department of Statistics in 1959

TABLE—4.2

Household Income Group*

Religion	*Lowest below Rs.* 100	*Lower middle class Rs.* 100-249	*Upper middle class Rs.* 250-499	*Highest Rs.* 500 *& above*	*All*	*Sample No.*
Hindus	5.27 (0.014)	6.41 (0.020)	6.64 (0.045)	6.47 (0.09)	5.60	6414
Christian	4.42 (0.116)	5.90 (0.037)	6.41 (0.130)	5.96 (0.021)	5.06	1061
Muslims	5.14 (0.111)	8.87 (0.470)3	8.25 (0.810)	10.00 (3.27)	5.89	438
All Religions	5.17 (0.012)	6.41 (0.016)	6.65 (0.036)	6.60 (0.075)	5.55	7913
Sample Number	2494	2839	1623	957		7913

*Source: Report on Family Planning Survey of Trivandrum City.
Figures in brackets give variances

It is seen from the table that the household size increases as the status of household increases upto upper middle income group and decreases in the highest income group. There is significant difference between the household size of lower income group and other income groups. The household size of Muslim households is greater than the household size of other religious groups. There is not much difference between household size of Hindus and Christians.

Literacy and Education.

Education and literacy are some of the aspects which measure the socio-economic status of the city besides income. The pride of place for literacy goes for Kerala according to last census also. About 47 per cent of the State's population are literate. The particulars of male and female literacy of the State by town|city is compared with the All India literacy in table 5.1.

As shown in Table 5.1 more than 58 per cent of the City's population are literates. Next to Kottayam, Trichur and Ernakulam, Trivandrum occupies the foremost place in the State from the point of literacy.

TABLE—5.1

Literacy of population of Trivandrum city compared to other towns of the State

City/Town	*Population*			*Literate population*			*Percentage of literate population to total population*
	Males	*Females*	*Total*	*Males*	*Females*	*Total*	
Trivandrum	122,318	117,497	239,815	84,063	63,799	147,862	61.6
Kozhikode	97,911	94,610	192,521	62,382	42,790	105,172	54.6
Ernakulam	60,271	56,982	117,253	42,233	32,339	74,572	63.58
Alleppey	69,977	68,857	138,834	46,159	33,962	80,121	57.7
Quilon	46,807	44,211	91,018	30,602	23,122	53,724	59.2
Kottayam	26,850	25,835	52,685	20,425	17,577	38,002	71.1
Trichur	36,305	36,733	73,038	24,984	21,756	46,740	63.99
Palghat	38,813	38,807	77,620	21,096	13,912	35,008	45.0
Cannanore	23,185	22,916	46,101	14,437	10,689	25,126	54.0
Kerala State	8,361,927	8,541,788	16,903,715	4,596,265	3,322,995	7,919,220	46.8
India	226,294,000	212,941,000	439,235,000	34%	12.9%	..	24.0

Source: Final population totals Paper No. I—1961 Census, Manager of Publications, New Delhi.

Marital status.

The marital status of the city's population will help to determine the number of concealed families for planning the future building activities especially for residential purpose.

The report on Family Planning household survey of the city presents the percentage distribution of persons by marital status and sex. The following table 6.1 gives out the percentage distribution by marital status and sex for Trivandrum City in 1959 in comparison with Kerala and Trivandrum District as per 1951 census figures.

TABLE—6.1

Sex-wise marital status of the population

Marital status	*Sex*	*Kerala State* 1951 *Census**	*Trivandrum District* 1951 *census**	*Trivandrum District Urban* 1951 *census**	*Trivandrum city as per Family Planning survey* 1958-59
Single	Male	60.25	62.78	61.26	62.62
	Female	48.15	50.51	48.97	53.15
	Total	54.11	56.65	55.13	57.73
Married	Male	37.14	34.88	35-61	34.98
	Female	39.33	37.36	37.99	35.66
	Total	38.25	36.12	36.80	35.33
Widowed etc.	Male	2.61	2.34	3.13	2.40
	Female	12.52	12.13	13.04	11.19
	Total	7.64	7.23	8.07	6.94
Total	Male	100.00	100.00	100.00	100.00
	Female	100.00	100.00	100.00	100.00

Source: Report on Family Planning Survey of the City of Trivandrum

* 1951 census of India, Paper No. 2. 1957.

No appreciable difference is noticed in the marital status distribution of the populations considered.

A detailed table 6.2 for Trivandrum city showing the percentage distribution of persons by age, sex, marital status and household income group is given. From this table it is seen that marriages below 15 years are not generally prevalent in the city. In the age group 15-24 years, 32 per cent females are married as against 5 per cent males. Highest percentage of married persons are in the highest income group.

(Please see Table 6.2)

Females especially those in the lowest income group begin married life earlier. It is also observed that the highest percentage of married persons is found in the age group 35-44, 88 per cent—94 per cent males and 82 per cent females. In all the income groups the percentage of widowers is less than that of widows which shows that chance of wives surviving husband is more than husbands surviving wives. Eventhough there is not much variation in the age at marriage among the various income groups, it is found to be increasing from the lowest income group to the highest. The average age at marriage of males is 27 and females 18.

Table—6.2

Percentage distribution of persons by age, sex, marital status and household income group

Age group	*Sex*	*Single*					*Married*				
		Lowest below Rs. 100	*Lower middle* Rs. 100-249	*Upper middle* Rs. 250-500	*Highest Above* Rs. 500	*All*	*Lowest below* Rs. 100	*Lower middle* Rs. 100-249	*Upper middle* Rs. 250-500	*Highest above* Rs. 500	*All*
1	2	3	4	5	6	7	8	9	10	11	12
Less than 15	Male	100.00	100.00	100.00	100.00	100.00	..	..	..	..	..
	Female	99.44	100.00	100.00	100.00	99.92	0.55	..	..	0.08	..
	Total	99.72	100.00	100.00	100.00	99.96	0.28	..	..	0.04	..
15—24	Male	89.34	95.36	100.00	97.14	93.93	10.66	4.64	..	2.86	5.07
	Female	61.25	65.12	75.28	72.64	67.15	37.50	33.88	24.16	25.47	31.76
	Total	73.91	80.26	86.33	84.83	80.37	25.40	19.24	13.31	14.22	19.06
25—34	Male	20.80	33.99	40.20	41.89	33.14	76.00	65.05	59.80	58.11	65.68
	Female	45.61	10.90	52.54	16.00	23.23	85.51	81.99	43.65	80.00	70.52
	Total	11.21	22.30	48.82	28.86	27.27	82.01	73.62	48.52	69.13	65.55
35—44	Male	4.00	3.95	6.32	6.82	4.76	93.33	95.39	92.63	93.18	93.88
	Female	0.76	3.88	2.47	1.89	2.29	81.68	78.29	90.12	81.13	82.23
	Total	2.49	3.92	4.54	4.12	3.59	97.90	87.54	91.48	86.60	88.38
45—54	Male	1.10	4.81	1.56	..	2.22	89.01	90.38	93.75	98.21	92.06
	Female	2.47	2.44	6.35	4.35	3.51	55.55	64.23	69.84	73.91	64.54
	Total	1.76	3.53	3.94	1.96	2.87	73.25	76.21	81.89	87.25	78.34
55 and above	Male	2.06	0.83	..	..	1.75	82.48	80.99	92.29	85.19	84.80
	Female	0.90	0.81	1.75	6.25	1.76	37.84	38.06	31.58	35.42	34.71
	Total	1.44	0.82	0.79	5.88	1.76	58.65	56.73	66.14	61.77	59.82
All	Male	62.11	63.98	63.34	59.58	62.74	35.19	33.92	35.62	39.17	35.30
	Female	52.77	53.16	63.12	51.15	55.09	35.94	35.20	29.61	37.95	34.47
	Total	57.22	58.61	63.22	55.38	58.78	35.58	34.55	32.61	38.56	34.87

Table—6.2 (*contd.*)

Age group	Sex	Widowed					Divorced and separated				
		Lowest below Rs. 100	*Lower middle* Rs. 100-249	*Upper middle* Rs. 250-500	*Highest above* Rs. 500	*All*	*Lowest below* Rs. 100	*Lower middle* Rs. 100-249	*Upper middle* Rs. 250-500	*Highest above* Rs. 500	*All*
1	2	13	14	15	16	17	18	19	20	21	22
Less than 15	Male	..	..	..	..	..	..	..	..	..	..
	Female	..	..	..	..	..	..	..	..	..	..
	Total	..	..	..	..	..	..	..	..	..	..
15—24	Male	0.42	..	..	..	0.42	0.83	0.99	0.56	1.89	0.97
	Female	0.23	..	..	..	0.06	0.46	0.50	.031	0.95	0.51
	Total	1.60	0.48	..	..	0.59	1.60	0.48	..	..	0.59
25—34	Male	4.67	3.32	2.12	..	2.99	4.21	3.79	1.69	4.00	3.26
	Female	3.54	1.92	1.48	..	2.01	3.24	2.16	1.18	2.01	2.17
	Total	2.00	0.66	..	..	0.91	0.67	..	1.06	..	0.45
35—44	Male	10.69	13.95	2.47	11.32	10.15	6.87	3.88	4.94	5.66	5.33
	Female	6.05	6.76	1.14	6.19	5.27	3.56	1.78	2.84	3.09	2.76
	Total	8.79	4.81	4.69	1.79	5.40	1.10	..	..	..	0.32
45—54	Male	37.04	30.08	23.81	21.74	29.39	4.94	3.25	..	..	2.54
	Female	22.10	18.50	14.17	10.79	17.36	2.91	1.76	..	..	1.43
	Total	13.40	17.35	5.71	9.26	12.57	2.06	0.83	..	..	0.88
55 and above	Male	57.66	62.90	66.67	56.25	60.88	3.60	3.23	..	2.08	2.65
	Female	37.02	40.41	33.07	31.37	36.66	2.89	2.04	..	0.98	1.76
	Total	2.19	1.96	2.11	1.25	1.73	0.51	0.14	0.13	..	0.23
All	Male	9.14	9.94	6.32	9.01	8.75	2.15	1.70	0.95	1.89	1.69
	Female	5.83	5.92	3.89	5.12	5.36	1.37	0.92	0.58	0.94	0.99
	Total										

Income and occupational status.

The most important single determinant of the standard of living is income. Under-developed economies are often characterised by a higher proportion of their working force in the primary sector of production. It has been observed in the history of economic development of several countries that this proportion decreases as the country achieves progress in industsrialisation.

Trivandrum city like other cities of India possesses only an insignificant proportion of their working force in the primary sector. But that does not mean it is industrially advanced. Table 7.1 gives the distribution of persons according to monthly income.

Table—7.1

Percentage distribution of persons by monthly income in Trivandrum city

Monthly income	*Percentage of persons*
Rs. 50 and less	40.3
51—150	46.5
151—300	9.9
301—500	2.2
Above 500	1.1

Source: Socio-Economic Survey of the City, Department of Town Planning, 1961-62.

It is seen that the monthly income of a vast majority of the city's population is very low. The minimum standard of life is assured only to a very small percentage of citizens. The average income of one earning member of the household is estimated to be Rs. 90 per mensem and per capita income is less than Rs. 24 per mensem. The per capita income for the State at 1955-56 prices for 1960-61 is Rs. 264.55 as per the quarterly Bulletin of Statistics for the quarter ended December 1962 while for All India it is Rs. 269 for the corresponding period. The per capita income of the city viz. Rs. 288 per annum, eventhough it is higher than that of the State and the country as a whole, present a grim picture of the economic growth.

(Please see Table 7.2)

In the age group less than 15 years that constitutes about 41 per cent of the city's population (as indicated in the table) the percentage of earners will be undoubtedly lower than in other age groups. This is quite natural since children cannot find employment or are incapable of earning. About 74 per cent of the citizens have no income and they have to depend solely on the remaining 26 per cent. Another notable feature is that males are the main earners while females are non-earning dependants. In the age group which constitutes the working force (15-55 years) males are mostly the earners. Male earning dependents in this working age group form only a very small proportion.

Table—7.2

Percentage distribution of persons by economic status, age, sex and household income group

Age group	*Economic Status*								
	Earner			*Earning Dependant*			*Non-earning dependant*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
1	2	3	4	5	6	7	8	9	10
Less than 15 years	0.76	0.95	0.85	1.14	0.24	1.38	98.10	98.81	98.46
15 to 54 years	64.31	7.94	34.52	7.50	7.68	7.60	28.19	84.38	57.58
55 and above	74.95	10.94	41.62	8.16	9.84	9.03	16.89	79.22	49.30
Total	38.56	5.45	21.49	4.89	4.95	4.92	56.55	89.60	73.59

Source: Report on Family Planning Survey of Trivandrum city, 1959-60.

Employment status.

The Report on Family Planning Survey of the city states that 27 percent of the total population are in the labour force, 45 per cent of males and 9 per cent of females. A large percentage of persons are students and domestic workers. About 24 per cent of the population is engaged in domestic work, 13 per cent of males and 46 per cent of females. Thus about 73 per cent of the population are estimated to be out of labour force. The concept of labour force and out of labour force can be compared with the new classification adopted in 1961 namely as workers and non-workers.

Table—7.3

Details of workers and non-workers in Trivandrum city

Classification	*Males*	*Females*	*Total*	*%age to total population*
Workers	54,482	13,974	68,455	29
Sex-wise percentage to the total workers	80	20	..	..
Non-workers	67,836	103,523	171,362	71

Surce: First paper, final population total, 1961 census publication of the Government of India.

It is seen that the figures of labour force and out of labour force more or less agree with that of the workers and non-workers respectively estimated in 1961 census. As revealed in table 7.3, only 29 per cent of the city's population belong to the category of workers and the remaining 71 per cent to non-workers. Thus it is evident that the low proportion of workers has affected the economy of the city.

According to 1961 census, the largest proportion of workers depend upon service occupations. This is naturally due to the position the city occupies as the seat of the State Government where all offices of Heads of Departments are located, besides other District|Regional|Taluk offices, etc. Manufacturing other than household industry, trade and commerce, construction, transport, storage and communications are the other occupations of the working population

of the city. The proportion of persons depending upon agriculture as in the case of other Indian cities is negligible.

Summary and conclusions.

To sum up, the following are some of the demographic characteristics of the city. The city accounts for 66 percent of the taluk urban population, 53 per cent of the District urban population and 9 per cent of the State urban population. Its density of population is 10,996 per sq. mile. The sex ratio, when only the household population is considered is between 1,003 and 1,008 females for 1,000 males. But when the non-household population is also taken into consideration, the sex ratio falls to 961. Nearly 40 per cent of the city population are composed of children of 14 years and under 34. The proportion of the city's population in the age group 15 to 54 is nearly 53 per cent. The majority of the population belongs to the place. Even among the migrants only a few have come from outside the State. 63 per cent of male migrants and 47 per cent of female migrants have migrated into the city in search of employment etc., while movements to the city incidental to sequential reasons claimed 53 per cent of female migrants and 36 per cent of male migrants. The average size of the household in the city is estimated to be about 6 and on an average there is more than one household in one house. The household size increases as the status of the household increases upto the middle income group (having a monthly income of Rs. 250-499) and decreases in the highest income group (Rs. 500 and above). The average number of earning members in households of lowest (less than Rs. 100) lower-middle (Rs. 100-249) upper middle and highest income groups is found to the 1.06, 1.40, 1.68 and 1.92 respectively. Literates constitute 58 per cent of the total population 69 per cent of the males and 50 per cent of the females are literates. Marriages below 15 years are not prevalent. About 58 per cent of the population is single, 35 per cent married and about 8 per cent widowed or divorced. 32 per cent of females in the age group 15-24 are married while the corresponding figure for males is 5 per cent. It is

observed that the highest percentage of married people belong to the age group 35-44 (about 92 per cent males and 82 per cent females). Widows out number widowers. Females of the lowest income group commence their married life earlier. In the city the average age at marriage of males is 27 and females 18. The average monthly income of an earning member is roughly Rs. 90 and the average per capita income is estimated to be about Rs. 25 per mensem. Not less than 71 per cent of the city's population are dependants. In the age group 15-54 years, which constitutes the working force of the city, males are the chief earners. According to 1961 census only about 29 per cent of the city's population are workers. Males form nearly 80 percent of its total working population. A large number of the workers are in service occupations.

Although the absolute growth of population in the city will be large, it is not expected that there will be major shifts in either the age or sex composition of the people. There will not be any likelihood of large changes in the average household size. Though birth and death rates will doubtless decline, thanks to the various improved medical facilities and family planning activities, it is likely that in the absence of very startling changes in the procreational habits of the city's population, these effects will tend to cancel each other so that absolute growth rate of its population, which in the decade from 1951 to 1961 was well above 28 percent will not fall much below this rate. Assuming a gross density of 30 to 35 persons per gross acre (0.0016 sq. miles) the required area to house the anticipated population of 5.06 lakhs in 1991 will come to nearly twenty five sq. miles at the present standards.

Other important objectives of city planning are the stabilisation and enhancement of the existing economic potential of the city. Like most other urban areas of the State, Trivandrum is devoid of any economic orientation. The growth of the city as the State capital and as the centre of higher education has a direct bearing on the occupational characteristics of the people and on its economic base. The

most significant stage in a growing city is the weakness of the agro-rural base and the shift to other occupations. This has been partly true of Trivandrum whose economy has undergone a shift from the Primary to the tertiary sector. In spite of the existence of a few manufacturing industries within the city and the suburbs, its economy has not shown any signs of improvement as yet. The heavy burden of dependency, the low per capita income, the increased cost of living, the unemployment and under-employment of the literates are the characteristics features of the city's economy. Thus in every respect urbanisation has not attained so far the goal namely the creation of a dynamic and balanced economy. This clearly points to the urgent need for industrialisation of the city to keep pace with its urban growth.

PART VI

Concluding Session

A. Chairman's address,

Sri N. M. Patnaik, Chief Secretary
to the Government of Kerala.

Friends,

I am very happy to be here in your midst to preside over this evening's function. When the organisers of the Seminar extended to me the invitation I accepted it at once. For one thing, I looked forward to the occasion as one to escape from the routine of office life and the inevitable drudgery of keeping steeped in files. Besides it gives me a rare chance to partake in the deliberations of this seminar on the population problem and to know the views held by eminent persons in the field. The problem of over-population is a crucial factor affecting our programmes of planned Development for India as a whole. How much more intense is there this problem with regard to Kerala which has a density more than thrice that of India as a whole. As one who is concerned with the day-to-day problems of the State administration, I am deeply interested in the population problem of the State and the would be solutions.

The consequences of the uncontrolled growth of population to India as a whole and more particularly to this State which leads all other States in this regard are being realised more and more by the people here and elsewhere. It has been agreed that a sizable portion of the gain in the regional income created by the developmental activities is being eroded by this increase in population. Any increase reflected in the national wealth should be reflected proportionately in the per capita income also, for after all it is the increase in population. Any increase reflected in the munity which in essence is the touch-stone of the success of all developmental activities. The control of the increase in population of the State is therefore an imperative necessity in this context.

The two important factors that affect population changes are the birth rate and the death rate—the influence of migration in the State being small and

of short term duration. The death rate in the State has gone down, in the recent decades thanks to the many medical and public health measures. For obvious reasons we can only keep on trying to reduce it still further with the attendant increase in population on this score. Therefore, the large increase in population in the State can be controlled only by controlling births. Realising this, the Government of India and the Planning Commission have given top priority to a policy of population control by birth control through family planning methods.

The education and motivation of the people in family planning are essential for the success of the programme. Increasing attention is therefore necessary in this regard. Government are providing more and more facilities to help the people by providing hospital and clinical facilities and also by distributing contraceptives free of charge or at subsidised rates, financial inducements are given in the case of sterilisation operation, free advice on family planning is provided by Social Workers and the medical personnel. In fact a division of Family Planning was established in the State Health Services Department to co-ordinate and promote the various activities.

There are many family planning methods in use. Among them sterilisation appears to me as the best method, suited to the conditions of the people. A child birth ceiling of two is the ideal one and it should be adopted. Persons who have only two children or there about should be persuaded to undergo this operation in larger numbers.

Obviously sterilisation of persons who have a large number of children is of little consequence to the control of population.

Incidentally, I would like to express my personal views on the question of legalisation of abortion which is often advocated as a method to reduce the birth rate in the State quickly. Since setrilisation to limit family size is at hand for those couples who are desirous of it, it is doubtful whether the legalisation of abortion is really necessary. If an accidental

pregnancy occurred to a practising couple, will it not be more human to allow its birth and then to sterilise rather than resort to induced abortion.

It is my firm belief that the advancement in education, age at marriage, economic conditions, urbanisation, industrialisation etc., which have in the past helped indirectly to stabilise the rapid growth of population in Western countries will influence the rapid growth rate in this State also in the coming years when our country will be experiencing these favourable factors as a result of the developmental activities. Since there is no time to lose, we have to give top priority to the reduction of births through the family planning programme.

B. PROCEEDINGS

The Seminar was inaugurated at 10 a.m. on 19-8-1964 by Shri K. A. Damodara Menon, the Hon'ble Minister for Finance and Industries. Shri M. P. Govindan Nair, the Hon'ble Minister for Public Health was in the Chair.

Shri Damodara Menon in his inaugural address dealt upon the gravity of the population problem of the State and stressed the importance of propagating the knowledge of family planning in the context of our democratic set up to motivate the people and to achieve population control.

In his presidential address, Shri Govindan Nair expressed his grave concern on the alarming growth of population within the limited area of the State. He expressed his satisfaction for the holding of this Seminar on the eve of the formulation of the IVth Five Year Plan.

Shri N. Gopalakrishnan Nair, Additional Director, Bureau of Economics & Statistics welcomed the Hon'ble Ministers and the delegates. In his welcome speech, he brought to the notice of the Conference, the low per capita income of Kerala from Agriculture in spite of its high return per acre, compared to other States. This was due to the low per capita land available for cultivation (27 cents). He said that it is befiting that Seminar of this type is held in the State this year which marks the centenary of the end of self-sufficiency in food and the commencement of the import of food into the State. The stage has now reached when the production in the State is sufficient only to meet the requirements for six months of the year. The phenomenal growth of population is responsible for this situation. It is time therefore that emphasis is shifted from death control to birth control.

Messages received from His Excellency Shri V. V. Giri, Governor of Kerala and Shri R. Sankar, the Hon'ble Chief Minister of Kerala wishing the deliberations of the Seminar all success were read out by Shri N. Gopalakrishnan Nair.

Dr. R. S. Kurup proposed the vote of thanks.

The session ended at 11 a.m.

The first technical session on "the demographic characteristics of population of Kerala" began at 11 a.m. with Dr. C. Chandrasekharan, Director, Demographic Training and Research Centre, Bombay in the chair, six technical papers were presented. The papers broadly related to:—

(i) General demographic characteristics;
(ii) Fertility;
(iii) Mortality; and
(iv) Migration.

Dr. Chandrasekharan in his opening remarks emphasised the need for a truly scientific approach to demographic problems. It is gratifying to note that the Planning Commission has been appraised of the importance of this. An assessment of the past achievements in the field of demography will be highly fruitful in the context of launching future programmes.

Out of 7 technical papers received, 6 were presented by their authors.

Dr. R. S. Kurup, Bureau of Economics & Statistics, Trivandrum in his paper explained the needs of the State in the matter of food, agriculture, education, employment, income, etc., in the context of the growth of population and suggested targets of birth control through sterilisation. Sri V. C. Chidambaram, Bureau of Economics & Statistics, Trivandrum expressed his doubt on the estimate of a 50% reduction in birth rate by the targets for sterilisation indicated in the paper. He drew the attention to a study undertaken by the Demographic Training and Research Centre, Bombay where it has been shown that a frequency of 7 male or female sterilisation per 1000 population done annually (wife aged 30 years or husband aged 35 years) can progressively reduce the birth rate only to a maximum reduction of 30% after 15 years. R. S. Kurup said that the target fixed by him was arrived at by assuming that all

couples with three children will be sterilised. Shri M. V. Raman, Indian Statistical Institute, Calcutta pointed out that in a recent paper Dr. Agarwala had compared the financial implications of birth control through sterilisation and condom method and found that the latter method was less expensive. The desirability of raising the age at marriage of females in Kerala to reduce fertility was then discussed. Shri N. C. Das, Indian statistical Institute, Calcutta in his paper pointed out that Kerala women with a higher average age at marriage showed higher fertility in the age group 30-39 compared to Madras and Mysore.

Dr. K. C. Zachariah, Demographic Training and Research Centre, Bombay said that various other vital factors other than the age at marriage influence fertility. The need to consider psychological and biological factors affecting fertility was stressed by Dr. Rama Varma. The Chairman endorsed these views.

Shri Ramalingom, Bureau of Economics and Statistics, Trivandrum found in his study on mortality trends that expectation of life at birth in Kerala has increased to 48 years in the decade 1951-1960 from 26 years during 1911-1920.

Shri V. Subramonia Swamy, Registrar General's Office, New Delhi and Dr. Zachariah dealt with migration to and from Kerala. Shri Subramonia Swamy presented inter-district migration figures besides the in and out migration figures. Dr. Zachariah said, that contrary to popular belief, Kerala had been a net gaining State till 1931 and a loser thereafter. He pointed out that the drain of educated persons from the State will in the long run be a loss. Dr. P. K. Gopalakrishnan, Director, Bureau of Economics and Statistics, Trivandrum said that migration to the extent pointed out will not be detrimental to the interests of the State, as there is already a large number of unemployed persons with education and skill. Shri M. V. Raman in his paper examined, the various factors affecting fertility in Kerala like higher age at marriage larger proportion of spinsters in

15-24 age group, the advancement in education and economic conditions etc., on one side contributing to lessen birth rates and the lower proportion of widows in the population and the gradual removal of the taboos on widow remarriage which may lessen this proportion further in the future the high marital fertility etc., which tend to increase birth rate on the other hand. He concluded that some kind of a shaky birth rate is likely to continue for some more time in Kerala.

Dr. Chandrasekharan concluded the session by saying that the discussions had given an insight into the specific demographic characteristics of the State and had also answered some fundamental issues relating to the demographic characteristics of Kerala's population. It was revealed that raising age at marriage, while reducing the period of exposure to reproduction alone will not bring about any significant reduction in fertility. While the percentage of single women in the early child-bearing ages is greater in Kerala, the incidence of widow-hood is less in the later child bearing ages. Marital status distribution of Kerala women therefore has only a nullifying effect on fertility rate, compared to the adjoining States.

The deliberations of the session called for prompt action in reducing the alarming growth of population by increasing attention to family planning methods especially sterilisation as the death rate is coming down rapidly and the fertility rate has not shown any significant decline.

The Second Technical Session on the 'Social and Medical implications of the growth of population' began at 3 p.m. with the introductory remarks by Dr. C. O. Karunakaran, the Chairman. He drove home the gravity of the population problem of the State and the imperative need for achieving quick results in controlling it. Out of 7 technical papers received 5 were presented by their authors. Dr. M. Thankavelu, Principal, Medical College, Trivandrum while presenting his paper described the methods of controlling pregnancy. He suggested

that urgent steps have to be taken for education in birth control methods of the masses in general and particularly of students at the matriculation level and for promoting research in the physiology of human reproduction to develop effective methods of family planning.

Dr. G. Velayudhan, Medical College, Trivandrum in his paper on methods of birth control strongly advocated mass sterilisation as the effective method to control fertility. He mentioned in this context, his experiments on the intrauterine coil. Mr. Kohli, Statistician, Family Planning Institute questioned the statements in the paper regarding the unreliability of the safe period and withdrawal methods. Sri Kohli also said that in a welfare State, it will take more than two decades to reduce the birth rate by 50%.

The Chairman posed the question whether legalised abortion can be accepted as a policy in the case of contraceptive failure. Dr. Chandrasekharan remarked that abortion if legalised should be followed by sterilisation to avoid dangers of repeated abortion.

Shri G. Pratapa Chandran Nair, Assistant Information Officer, Quilon in his paper recounted his experiences in the field of family planning propaganda and suggested organisational improvement for better propagation of ideas for motivating the people. Mr. G. K. Mehrothra of the Registrar General's Office, New Delhi presented a study on the effects of education on fertility of Kerala women based on the fertility survey of the 1961 census. He found that in the category of 'elementary' the fertility rate is higher than in the "illiterate" category while in the higher educational groups there is a decline.

Mr. Surendranathan Nair, Bureau of Economics and Statistics, Trivandrum reviewed the family organisation in Kerala through the ages and its effects on fertility.

Dr. B. Natarajan pointed out that the basic problem in Kerala is that of controlling population. For this, the example of Madras State in reducing birth

rate through sterilisation was pointed out. He said that, instead of going in for a separate Family Planning Department as suggested by Dr. G. Velayudhan the entire community development staff can be utilised for this purpose. The implementation of the family planning programme should be left with the Doctors. He advocated effective campaigns to motivate people for the programme, adopting suitable social and psychological approaches.

Dr. Ramavarma suggested that Family Planning propaganda should be based on the approach of 'hidden persuasion' to have greater impact in the beginning.

Dr. Chandrasekharan expresed his satisfaction on the realisation of the importance of the science of demography and need for studies at regional levels within the country. He further suggested that studies on attitude and motivation affecting acceptance of family planning practices at the regional and sub-regional levels will help to mitigate the population problems and to take necessary remedial measures at these levels. Dr. C. O. Karunakaran is his concluding remarks said that there is no disagreement as to the gravity of the population problem and the imperative need to control it. In this context, he pointed out certain contradictions in policy like the family planning programme on the one hand and the welfare measures like maternity benefits now in vogue on the other. This Session also stressed the need for intensive sterilisation along with legalisation of abortion in cases of contraceptive failure and reconsidering the maternity benefit system.

The conference noted with pleasure the success of the experiments in oral contraceptives and in interauterine coil done in the Medical College, Trivandrum. The session came to a close by 5.30 p.m.

The *Third Technical Session* on the *"Economic Implications of the present growth of population of Kerala"* commenced at 10 a.m. on the 20th August 1964 with Dr. B. Natarajan in the Chair. Out of the eight technical papers received, 7 were presented by the authors.

The paper presented by Sri K. Balakumaran Nair Department of Town Planning, Trivandrum dealt with the "Economic Demographic Characteristics of Trivandrum City". In the paper on 'Workers in Kerala—an analysis of intercensal change' —Sri B. D. Kale, Institute of Economic Growth Dharwar examined the increase in the number of workers and the changes in the distribution workers in different industrial categories that has come about during the last decade. Dr. P. G. Kesava Panicker, Kerala University dealt on the difficulties for economic growth in Kerala in the face of the mounting growth of population namely the magnitude of investment required to effect a significant increase in per capita income and the dissipation of available savings in less productive directions like education, public health measures etc. Shri Narayanan Nair, Bureau of Economics and Statistics, Trivandrum in his paper on the "Influence of the population' of Kerala on its economic development" dealt mainly on the economic implication of the rapid growth of population and concluded that a policy to control population is a necessary adjunct to plans for economic development. Shri Kohli in his paper on "Population growth and Economic Development in Kerala" discussed the characteristics of the population affecting population changes. Rural and urban projections of the population for 66 and 71 were given. The food grain requirements and its availability were also assessed. The measures to promote family planning that were implemented were also discussed.

The papers presented by Shri P. S. Sharma, Registrar General's Office, New Delhi and Shri K. A. George, Bureau of Economics and Statistics, Trivandrum were on the same lines. Shri George emphasised that the known birth control methods might take a long time to bring in results in a democratic set up and therefore suggested migration and urbanisation to relieve the present pressure on agricultural land. Shri Sharma drew a distinction between plantation and non-plantation crops in the agricultural sector. He also emphasised the position of tenancy farming in the State's agriculture. He observed that in some

of the districts the percentage was as high as 75. Another important point which he brought out was the downward trend in consumer expenditure relating to foodgrains. Another important point highlighted by him was the part played by the size of holdings in agricultural production. Shri N. Gopalakrishnan Nair, Deputy Director, Bureau of Economics and Statistics, Trivandrum commented that it seemed to him that labour and output were not taken into account in working out productivity indices. As such he thought that these indices did not reflect productivity. N. Gopalakrishnan Nair, Additional Director pointed out that the figures on agricultural production in the districts require some clarification. Dr. Ramavarma suggested that only after detailed studies on agricultural practices anything can be said on productivity. Shri M. K. Devassy, Superintendent of Census Operations, Kerala, intervened to clarify the definition of 'Plantations' adopted in the 1961 Census. He explained that a small percentage of 'risk error' has to be accepted in any census. The Chairman commented that Shri Sharma's paper was a thought provoking one, but that a re-consideration of its statistical basis is necessary.

The Chairman posed the question whether Adam Smith's model might not be suitable to the Kerala Problem. Shri V. R. Pillai, Professor of Economics, Kerala University pointed out that this was applicable in advanced economies but that it might not be suitable to a developing economy like Kerala's.

Dr. P. K. Gopalakrishnan expressed his view that a large amount of wasteful consumption was associated with ownership income. He stressed that the tax machinery of the State has not succeeded in tapping these resources for productive purposes. He thought that the population problem was overemphasised to cover up social evils.

Shri V. R. Pillai said the problem of the inadequacy of total output was the vitiating factor in Kerala's economy. He said that Kerala had not shared proportionately the industrial advancement of the Plans compared to other States. Even in the

Third Plan investment in the industrial sector was incommensurate with other States. He drew the attention of the Conference to the problem of production. He had observed in a study in Trivandrum and Quilon districts that a large majority of farms were running at a loss in spite of the assistance from the Government and other agencies. He also added that the scope of migration was limited in solving Kerala's problems.

Dr. Chandrasekharan observed that the deliberations at the Seminar had highlighted that co-ordination is necessary between demographers, economists and planners. He did not anticipate a sudden fall in population due to birth control measures because of the rapid downward trend of mortality rates in the coming years. It is necessary to distinguish the rate of growth of the economy was the rate of growth of population. These two had to be viewed separately. He said that our immediate concern should be to see how best we can utilise the present resources.

The Chairman in his summing up said that different views were voiced regarding the effect of population on economic growth and no definite conclusions had been arrived at. He said that Kerala economy has to reach as early as possible the take-off stage when rate of population growth will not be detrimental to economic development. Various associated factors have to be brought into play in order to achieve this end. Kerala's population problem has reached that stage where, if a choice is to be made between investment of equal amounts on income generating activities and birth control measures, the choice would seem to fall on the latter.

The concluding session began at 3 p.m. with Shri N. M. Patnaik, Chief Secretary to the Government of Kerala in the Chair. Welcoming the Chairman and the delegates Dr. P. K. Gopalakrishnan spoke of the present tendency of the married classes to indulge in conspicuous spending. The money for this wasteful expenditure was available to them from tax evasion. The population problem, serious as it is, is often exaggerated to cover up the social evils

which lay at the root of our troubles. The Chairman in his address dealt upon the population problem in general and said that birth control through sterilisation of abortions because sterilisation can be resorted to avoid unwanted pregnancies.

Shri K. A. George then presented a summary of the proceedings of the Seminar. Shri V. C. Chidambaram proposed the vote of thanks.

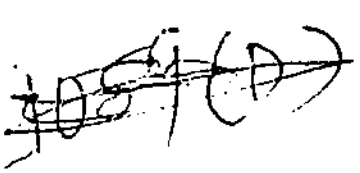
The session ended at 4 p. m.

APPENDIX

APPENDIX

List of Papers submitted but not presented

1. Some demographic characteristics of married couples of Rural Bengal	Dr. R. N. Basu, All India Institute of Hygiene and Public Health, Calcutta.
2. Age at marriage in Kerala	Dr. S. N. Agarwala, Institute of Economic Growth, Delhi.
3. Can Kerala show the way towards controlling fertility in India	Dr. K. K. Mathen, All India Institute of Hygiene and Public Health, Calcutta.
. Development implications of population growth in Kerala — the choice of Policy	Dr. P. A. Nair, University of Bombay.
. The working force of Kerala and its employment pattern	Dr. P. M. Visaria, University of Bombay.



1059