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# POPULATION BULLETIN

of the

# UNITED NATIONS

No. 5—July 1956

**UNITED NATIONS**

Department of Economic and Social Affairs

**NEW YORK**

*NOTE*

The *Population Bulletin of the United Nations* is intended to provide information of general international interest relating to population trends and problems, as well as technical material for the use, in particular, of governmental agencies, scientific institutions, and scholars engaged in social and economic research.

The editors will be glad to receive information regarding national and international conferences relevant to population questions which are of interest to demographers in various parts of the world.

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ST/SOA/SER. N/5

15 July 1956

UNITED NATIONS PUBLICATION

SALES NUMBER: 1956. XIII. 4

Price: \$U.S. 0.60; 4/6 stg.; Sw.fr. 2.50  
(or equivalent in other currencies)

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## SPECIAL NOTICES

### Survey of legislation relevant to population

The United Nations recently issued a compendium of laws on marriage, divorce, legitimacy and family planning - some of the factors which may profoundly influence population trends.<sup>1/</sup> The document summarizes legislation in force during the latter part of 1952.

The report covers twenty-four countries of which ten are in Europe, five in North America, four in Asia, two each in Oceania and South America and one in Africa.

In these countries are found diverse economic and social conditions and demographic trends. The laws both affect and reflect these conditions and the problems arising from them. The examples of social legislation presented in the document have important demographic implications. In the past, national laws were seldom drawn up with a view to influencing population growth, but rather, population policy emerged as a by-product of legislation on other subjects.

Two other recent studies summarize legislation having a direct bearing on population structure and trends. The study, Population Policies: A Survey of Recent Development, deals with laws that are specifically designed to encourage population growth or prevent population decline.<sup>2/</sup> The International Labour Organisation has also compiled a volume of monographs on the immigration laws of some thirty-five countries, and this study will be published shortly.

The present publication deals with certain aspects of the larger body of national law which has not been specifically formulated for the purpose of influencing population trends, but which nevertheless may have that effect. The topics of legislation covered by the report include:

#### Marriage and divorce

- (a) Minimum age for marriage
- (b) Pre-marital medical examination and certificate
- (c) Remarriage, minimum period of widowhood, maximum number of marriages
- (d) Impediments to marriage

<sup>1/</sup> United Nations, Survey of Legislation on Marriage, Divorce and Related Topics Relevant to Population, ST/SOA/29, New York, 1956. A limited number of copies of this publication are available in English and French upon request.

<sup>2/</sup> Hope T. Eldridge, Population Policies: A Survey of Recent Developments (Washington, International Union for Scientific Study of Population, 1954).

- (e) Polygamy
- (f) Protection of children born in consensual marriages
- (g) Legal causes for divorce and separation

#### Contraception

- (a) Sale of contraceptives; prohibition or regulation
- (b) Advertisement of contraceptives; prohibition and regulation
- (c) Dissemination of information on the use of contraceptives
- (d) Provision of contraceptive materials

#### Abortion

- (a) Induced abortion
- (b) Abortion for medical, social or eugenic reasons

#### Sterilization

- (a) Voluntary sterilization
- (b) Compulsory sterilization on account of mental deficiencies, epilepsy or criminality.

The publication reveals considerable differences in the laws regulating marriage in many of the countries included and also indicates that there are differences even among the laws of different provinces or states within some countries. This is notably so in countries like Australia, Canada and the United States.

Most countries have laws for the protection of various groups of children. A number of countries do not recognize consensual marriage and children born out of wedlock are consequently not afforded the same recognition and protection given to children of legal unions. The legislation of some countries, however, reflects a great concern for children born of unwed parents. Czechoslovakia and Panama typify those States which accord all children equal rights irrespective of birth. For example, Panama's legislation declares *inter alia* that "All children are equal in the eyes of the law and have the same rights of inheritance in the case of intestate estate".

In most countries abortions for other than medical reasons are illegal and are often punished severely. The Norwegian law on induced abortions prescribes criminal penalties even for relatives of unmarried pregnant women and for others in positions of authority over them, who do not help to prevent them from inducing abortion. In some countries, however, abortions on social or eugenic grounds can be performed legally under certain specified conditions.

It is also shown that the countries have a number of legal provisions which bear directly upon fertility and more especially on marital fertility. Most countries have measures which limit age at marriage and some stipulate the maximum number of marriages that may be contracted by an individual. These regulations bear directly upon the number and ages of persons entering into the marriage cohort each year, and consequently upon the annual number of births. There are legal stipulations concerning polygamy, divorce and separation, remarriage and minimum period of widowhood. These provisions affect in varying degrees exposure to the risk of pregnancy within marriage.

Laws indirectly affecting population are numerous, and by no means all of them are described in this publication. Economic and social measures are introduced increasingly by both national and local legislatures. The United Nations publication Economic Measures in Favour of the Family gives a survey of legislation adopted by various countries to relieve financial strain caused by dependents, particularly children.<sup>3/</sup> There is also a series of publications on laws relating to the protection of

migrants and conditions to be observed in their settlement.<sup>4/</sup> Such legislation has an influence, even indirectly, on population trends.

The present report is intended to be useful as a reference manual for persons concerned with social policy in relation to demographic and social problems; it has the advantage of presenting in one volume a set of laws not otherwise readily available.

Much of the material was supplied by Governments in response to a request from the United Nations. The report was prepared for the United Nations by the French Institut National d'Etudes Démographiques. M. Henri Bunle, formerly Director of the Statistique Générale, M. Jean Daric, Head of Service at the Institut National d'Etudes Démographiques, and M. Jacques Doublet, Director-General of the Sécurité Sociale au Ministère du Travail et de la Sécurité Sociale participated in the work under the guidance of Professor A. Sauvy, Director of the Institut. The monograph on the United States was largely prepared by Mr. Fowler V. Harper, Professor of Law at Yale University.

### The 1960 world population census programme

#### Prepared by the Statistical Office of the United Nations

From the point of view of national activity in the taking of population censuses, the decade 1945-54 far outranks any other decade in history. For statistical purposes the world may be considered to consist of approximately 214 sovereign countries or territories, and to have a total population of some 2,500 million. In the decade around 1950 more than 150 areas with an estimated population of approximately 2,000 million were enumerated. This represents the enumeration of 80 per cent of the world's people.

Many circumstances, especially the increasing recognition by Governments of the value and need for various forms of demographic statistics for the social and economic welfare of their people, have contributed to this success. The United Nations activities in connexion with the 1950 censuses were also influential in that they encouraged and assisted countries in this task and helped achieve results of a higher technical quality.

The United Nations programme in relation to the 1960 censuses is already under way and is based on an evaluation of the international experience gained during the past years. The United Nations is

endeavouring to make the programme still more useful and effective than the 1950 census programme. The first stages of the 1960 census programme include the following:

#### 1. Action by the Statistical Commission in 1954.

At its eighth session, the Statistical Commission indicated topics for which more study was required for the next series of censuses. These were (i) the types of questions essential in a general population census, with a view to concentrating on those questions; (ii) the extent to which sample surveys can be utilized, in place of complete enumeration; to obtain detailed and supplementary information on certain subjects; (iii) operational phases of census work, such as the early planning and testing of proposed procedures, adequate education for obtaining the co-operation of the public, suitable arrangements for the training of key personnel, and methods of expediting the release of preliminary and final results; (iv) the main problems relating to the tabulation of census data; (v) the possible application of sampling procedures to the various stages of census processing.

#### 2. Action by the Population Commission in 1955.

At its eighth session, the Population Commission considered a memorandum by the Secretary-General on the preparation of standards for population censuses to be taken around 1960. It noted with satisfaction the growing extent and coverage of national census activity and the closer agreement between national practices and the recommendations made by the United Nations. The Commission recommended inter alia the extension of

<sup>3/</sup> United Nations, Economic Measures in Favour of the Family, ST/SOA/8 (United Nations Publication, Sales No. 1952.IV.6).

<sup>4/</sup> International Institute for the Unification of Private Law, Compilation of Laws on the Legal Status of Aliens (Rome, 1953) 10 volumes; and Legal Status of Aliens: Systematic Compilation of International Instruments (Rome, 1954-1955) 11 volumes. See also United Nations, Handbook of International Measures for Protection of Migrants and General Conditions to be Observed in their Settlement, ST/SOA/15 (United Nations Publication, Sales No. 1953.IV.5).

regional consultations on census matters to additional areas, and it stressed the need for more concentration in the international recommendations upon problems of organization, technical training, tabulation programme and methods of compilation. The Population Commission also requested the Secretary-General to call the attention of the Statistical Commission to the question of the co-ordination of cartographic activity with future census plans.<sup>5/</sup>

3. Methodological studies. In accordance with the emphasis given by the Statistical Commission and the Population Commission to the study and evaluation of previous census experience, the Statistical Office of the United Nations has undertaken the preparation of a new series of methodological studies. These studies are based on the census schedules, enumeration instructions and other materials furnished by some 50 countries which took censuses in the decade 1945-54. The studies now completed deal with the concepts and definitions for each census item or topic. Other studies will relate to operational aspects of the census. The document numbers and titles of the studies already issued are:<sup>6/</sup>

ST/STAT/P/L.2	Types of data collected
ST/STAT/P/L.3	Total population
ST/STAT/P/L.4	Sex and age characteristics
ST/STAT/P/L.5	Marital status
ST/STAT/P/L.6	Place of birth
ST/STAT/P/L.7	Citizenship (legal nationality)
ST/STAT/P/L.8	Language
ST/STAT/P/L.9	Educational characteristics
ST/STAT/P/L.10	Nuptiality and fertility
ST/STAT/P/L.11	Religion
ST/STAT/P/L.12	Physical and mental disabilities
ST/STAT/P/L.13	Economic characteristics
ST/STAT/P/L.14	Applications of statistical sampling
ST/STAT/P/L.15	Studies in data-processing methods
ST/STAT/P/L.16	Timing and interrelationship of population censuses with censuses of housing, agriculture, industry and distribution
ST/STAT/P/L.21	Ethnic characteristics and native customs

<sup>5/</sup> Official Records of the Economic and Social Council, Nineteenth Session, Supplement No. 5, Population Commission, Report of the Eighth Session, E/2707, paras. 60 to 66.

<sup>6/</sup> Documents ST/STAT/P/L.17 to 20 include the comments submitted by four regional groups on the United Nations draft census recommendations.

4. Draft recommendations. The purpose of previous United Nations census recommendations was largely limited to increasing the international comparability of basic demographic items. The 1960 draft recommendations have a broader aim, in accordance with the observations of the Statistical Commission and the Population Commission that an increase in the quantity and quality of data available for national and international use requires some consideration of all phases of national census activity. Accordingly, the present draft recommendations give consideration to problems of census planning, organization, technical training, tabulation programme, methods of compilation and the like, as well as to standard definitions and classifications of census items. It is recognized, however, that in reference to organization and operational questions, international recommendations cannot take a categorical form and should be more in the nature of suggestions.

On the basis of the experience with the 1950 census programme, it has been observed that international recommendations are most useful if soundly based on the experience of many countries. The methodological studies mentioned above have therefore been utilized as first guides to national interests. The draft recommendations prepared to date are presented in document ST/STAT/P/L.1/Rev.1.

5. Regional consultations. It was thought desirable to obtain the technical views of the various regional groups on the draft recommendations prior to the ninth session of the Statistical Commission. Accordingly, before the Statistical Commission met in 1956, four regional groups considered these recommendations. As a part of the work programme of the Conference of European Statisticians, a working group on population censuses held a meeting from 22 to 27 August 1955, in Geneva. The views of this working group are given in document ST/STAT/P/L.17. The First Statistical Seminar for Arab States, sponsored by the United Nations and the Government of Egypt, with the co-operation of the Arab League, met in Cairo from 19 November to 1 December 1955. Among other subjects, the Seminar considered the draft recommendations and discussed various problems of census planning and administration. The parts of the report relating to population censuses are given in ST/STAT/P/L.18. The United Nations draft census recommendations were submitted to the Inter-American statistical meetings held in June 1955 in Petropolis, Brazil, and immediately transmitted to the Governments of the American countries for comment through a newly-established Census Sub-Committee of COINS (Committee on the Improvement of National Sta-

tistics, Inter-American Statistical Institute). On the basis of comments received from countries, the Census Sub-Committee gave detailed consideration to the draft recommendations at its meeting held in Washington, D.C., from 30 January to 10 February 1956, and its report on census questions is reproduced as ST/STAT/P/L.19.

The Fourth Regional Conference of Statisticians for Asia and the Far East was held in Bangkok, March-April 1956, and devoted a major part of its time to the consideration of census problems and to the United Nations draft recommendations for the 1960 series of national censuses. The report of these deliberations is given in ST/STAT/P/L.20.

6. Action by the Statistical Commission in 1956.

At its ninth session, the Statistical Commission reviewed the progress which had been made throughout the world in this field and considered what steps should be taken in preparation for the World Population Census of 1960.<sup>7/</sup> The Commission recommended that the Economic and Social Council should adopt a resolution encouraging countries to conduct a population census during the ten-year period around 1960, taking into account,

as far as possible, the wishes expressed in international and regional census recommendations. In addition, the Commission recommended: (i) that additional studies should be made as a basis for the revision of some of the draft recommendations, particularly those relating to the economic and social characteristics of the population; (ii) that in revising the draft census recommendations more attention should be given to operational aspects such as sampling and methods of compilation; (iii) that the various proposed lists of items should be simplified into a single list which would be neither a minimum nor a maximum list; (iv) that co-operation should be maintained with the interested specialized agencies and with such regional groups and conferences as may be able to assist in the development of recommendations of maximum national, regional and international usefulness; (v) that a revised draft of the recommendations should be submitted to the Population Commission at its 1957 session, and for final consideration to the 1958 session of the Statistical Commission. The Commission also recommended the preparation of a new series of handbooks and guides covering problems of planning and carrying out of national population censuses and stressed the importance of the early development of a comprehensive and balanced technical assistance programme for the 1960 censuses.

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<sup>7/</sup> Official Records of the Economic and Social Council, Twenty-second Session, Supplement No. 7, Statistical Commission, Report of the Ninth Session, E/2876, paras. 87 to 107.

# CULTURAL VALUES, SOCIAL STRUCTURE, AND POPULATION GROWTH

By G. William Skinner

## Paper prepared for the Seminar on Population in Asia and the Far East

### INTRODUCTION

Cultural anthropology has not yet made the contribution to demographic science of which it is capable. The anthropologist's holistic approach to the way of life of a people, developed in his studies of simpler, so-called primitive peoples, has in recent years been applied to larger Asian societies with more complex cultures. The concern of anthropology for the totality of human culture in a given social group should yield data very much to the demographer's needs, for the demographic process is, par excellence, intimately tied up, in a mesh of cause and effect, with the whole of human behaviour.

The basic concept of anthropology is culture. A society's culture is a product of its history, but at any given time it consists of an inter-related complex of designs for living which guide the behaviour of the society's members. The concept of culture, as developed by anthropologists, is a broad and inclusive one. Scholars outside the anthropological tradition often categorize human phenomena as economic, political, social, religious, etc., and cultural. This makes of culture a residual category consisting perhaps of folklore, music, art and unclassifiable exotic customs. Needless to remark, anthropologists vigorously dissent. It is, of course, not because of this categorization that this paper will be concerned with only part of certain aspects of culture. The limitation follows, rather, from considerations of time and of the academic specialities represented at the Seminar on Population in Asia and the Far East. The concern here is solely with general values and attitudes and such structural features of family, kinship and religion as pertain to population growth.

To emphasize the interrelatedness of the social and attitudinal factors bearing on population growth, it would theoretically be desirable to take several Asian cultures and describe the totality of each as it relates to growth factors. However, this approach would perhaps serve as much to point up the gaps in our knowledge about any one culture as to elucidate the variety and potential effects of cultural differences. Instead, the cross-cultural range of attitudes and social practices which affect population growth will be suggested here in a more systematic fashion. Let us begin with the axiom that

the population growth of a society is a function of fertility and mortality within it and of migration into and out of it. The aspects of culture considered here relate to all these factors of population growth, but — population problems in Asia being what they are — more attention will be accorded fertility than mortality or migration. The valuation of children will first be discussed; the social regulation of sex, second, the control of conception, third, and the post-conception regulation of child survival, fourth. These will be followed by scater general treatment of attitudes and cultural factors relevant to health and mortality, and to migration.

### THE VALUATION OF CHILDREN

Children are positively valued in all societies that have survived to the present time. But there is a tremendous variation from one culture to another in the intensity of this valuation, in the priority it holds relative to other values, in the sanctions giving it force within the culture, and in the arithmetic of its concrete manifestation. At one extreme are cultures such as the Mundugumor of New Guinea, among whom the advent of almost every child is regarded with dismay verging on hostility. At the other, one can point to the Koreans, among whom children are received with indiscriminate joy.

The relative valuation of male and female children is generally tied up with the division of labour between the sexes, with the rules of marital residence, with the economic arrangements of marriage, and with the inheritance patterns, both of property and of ritual duties. These various traits do not necessarily all work in the direction of favouring sons or daughters in a given culture, but in most of the larger agrarian societies in Asia, patrilocal marriage, patrilineal descent, patrilineal inheritance of property and ceremonial duties all tend to favour male children over female. A distinct cultural preference for either male or female children tends to encourage high fertility. If, for example, the cultural ideal in one society is to have three offspring with no preference as to sex, while in another society the ideal is also three children but of whom two must be sons, it is apparent that the second society will require proportionately more births to satisfy cultural demands. In such cultures as that of the Central Thai,



with permissive or neo-local residence, a minimum of patrilineal emphasis, mixed inheritance patterns and lax sexual division of labour, there is no decided preference for boys or girls, and this factor can have no effect on fertility.

Different cultures employ varied techniques and sanctions to encourage the birth of many children. One might note, first, the enhanced prestige accorded the mother of many children, and especially of many sons, in diverse cultures from Arabia to Korea. By contrast, spinsters, barren women and sonless mothers past the middle reproductive ages are given little or no prestige and regarded with contempt, malicious pity, or at best commiseration. Religious sanctions are also frequently brought to bear on fertility. In Arabia, having as many children as possible is said to be the will of Allah, and for many Indian groups children are considered a gift of the Gods. Ethical sanctions are especially evident in societies within the Chinese orbit of cultural influence. Every Chinese has heard of Mencius' famous injunction: "There are three unfilial acts, and of these the lack of posterity is the greatest." One student of Chinese family life has noted wryly that Mencius was so preoccupied with the heinousness of the offence that he neglected to state the other two unfilial acts. The Confucian ethic simply fails to allow in its treatment of social relationships for the possibility of childlessness. According to the Hindu shastras, only a man who marries and produces a son can ascend to Heaven. The traditional blessings to the bridal couple hammer the point home again; To the Brahmin girl in India: "Be the mother of eight sons and may your husband live long"; to the Chinese bride: "May your children be as numerous as grasshoppers." The artistic symbolism of China, India and all the cultures they have influenced in Asia abounds in exhortations to maximum fertility. Where the nuclear family is inevitably part of a consanguineous group such as a lineage or clan, or of an endogamous socio-economic class or caste, then the social pressures on the married couple within the groups are likely to be strong. In China, each lineage is obsessed by the necessity for lineal continuity through the male line, to ensure unbroken worship of the lineage ancestors. In India, rivalry among castes and sub-castes has led elders within certain groups to demand more and more children to ensure an increase in the size and strength of the groups.

#### THE SOCIAL REGULATION OF SEX

The ways in which diverse cultures deal with fertility can best be seen, however, if note is taken of the attitudinal, religious and social features which regulate the object of sexual attention and the occurrence of the heterosexual act. It is perhaps unnecessary to point out that all societies control sex. Some of this regulation can be seen to serve the end of social perpetuation, but perhaps the greater part is aimed at avoiding the social disruption and malfunction which would follow from

indiscriminate competition over sexual favours. Thus, while the greater part of this social regulation of sex is relevant to fertility, the relevance is often only incidental. The regulatory taboos, permissions and injunctions in any one society do not necessarily all have a unidirectional effect on fertility, so that in analysis one must determine the net effect of those regulations favourable to a high fertility rate and those favouring a low one.

Marriage and the family are cultural universals. But few cultures in Asia, or the world for that matter, lay a blanket taboo on sexual intercourse outside marriage. Institutionalized premarital chastity is found in a great many societies; its importance for fertility lies in the consequent early commencement of childbearing on the part of young girls, and to some degree in mate-selection on a fertility basis. Among the Bontoc Igorot of the Philippines, for example, young unmarried girls sleep in a special dormitory where they are visited by their lovers. Pregnancy usually leads to marriage, while alliances that are obviously not fruitful or congenial are discontinued. Where there is no cultural distinction or discrimination against children born out of wedlock, the pro-fertility effect of institutionalized premarital sexual union is enhanced. The earliest possible onset of childbearing is achieved in certain other societies through child marriage, for such unions are generally consummated soon after the physical maturity of both partners. Age at marriage is very much a matter of cultural attitude. Other things being equal, when sex life within marriage begins for the women in the early teens, as in many parts of rural India, the total number of births per woman is likely to be higher than where marital sex life begins in the early twenties as in rural Japan today. Culturally preferred early marriage is frequently found where premarital chastity is prescribed, at least for girls. The difficulties of its enforcement for ten years or more after puberty in unchanged cultural contexts suggest that drastic alterations in marital age patterns are not readily made apart from other far-reaching social changes.

How nearly universal marriage is in a society depends upon cultural attitudes, of course, but structurally speaking it depends upon the availability of acceptable statuses alternative to or outside of marriage. Only in the most modernized of the Asian countries are there available professional roles carrying sufficient rewards in themselves to obviate marriage for those who would personally prefer to by-pass it. In virtually all of the large Asian societies, today as traditionally, the only culturally sanctioned adult roles which obviate marriage are those of priests, monks, nuns and ascetics. In this regard, there are cultural differences from one society to another that are not irrelevant to fertility patterns. Let us note the relative proportion who function during their lives in the priestly or ascetic role, the duration of such service, whether celibacy is required, the usual ages and sex of those assuming such statuses, and the degree of prestige accruing to them. Male

roles in Buddhism alone illustrate a wide range of variation. In Chinese society, for instance, celibacy is required of Buddhist priests, who ordinarily take the vows for life in a ritual which permanently marks them physically. But the prestige accorded them is not high, and the proportion of Chinese who assume such roles is negligible. The situation in Tibet, however, is quite different. The highest prestige in the society is reserved for those in the Lamaist orders, and a comparatively high proportion of young men take the vows of celibacy. Tibetan fertility is clearly depressed in consequence. In Thai society, the effect on fertility of celibate service in Theravada Buddhist orders is small, for, even though a still larger proportion of men enter the monasteries and priestly prestige is high, only a minority serve for longer than the three-month period at Buddhist Lent. As a general rule, service in the Thai Buddhist priesthood is part of the ideal life cycle for males, which emphatically also includes marriage and having children. In Korea and Japan, to mention yet other examples, most Buddhist orders are not even celibate, and the majority of priests are married.

In terms of fertility effect, the widows and widowers in a society are potentially comparable to celibate priests and nuns. If extra-marital relations are not permitted and widow or widower remarriage is proscribed in a given society, then those widowed are effectively prevented from making any further contribution to births. China and India provide some of the best analyzed examples of the relation between the fate of the widowed and fertility rates.

In Chinese society, widowers with children have, in child-care needs, a socially approved reason for remarriage, while widowers without children are subject to all the pro-marriage pressures applied to men who never married. In the case of women, however, celibate widowhood is a traditional ideal much celebrated in Chinese histories and literature. Every district gazetteer in China lists the names of outstanding virtuous women, the great majority of whom were young and sometimes chaste widows who renounced marriage. The very fact that celibate widows are so loudly extolled, however, indicates that widow remarriage as such is neither prohibited nor rare. When living or economic situations are such that a widow returns to her own family, when the widow is still young, or when she has borne no sons for her husband's family, she may very well achieve greater social rewards in the long run by risking the initial disapprobation of remarriage. The age structure of Chinese society is such that a decided shortage of women of marriageable age exists, and the surplus males tend to prefer marriage to a widow rather than risk lifelong bachelorhood. Barclay's admirable analysis of widowhood and remarriage in Taiwan suggests a surprisingly high remarriage rate for widows in their 20's and 30's, especially in the decades early in this century before mortality declines began to alter the structure of the population away from the pre-modern

patterns.<sup>1/</sup> In Chinese society, the pervasive cultural sanctions favouring marriage and childbearing are, on the whole, so strong as to minimize the effect on fertility of the cultural disapproval of widow remarriage.

This is manifestly not the case in several cultures and sub-cultures in India. There one finds a variety of religious, caste and tribal groups which vary from outright prohibition of widow remarriage to encouragement of it. Davis' monumental analysis of the demography of the Indian subcontinent has pointed up the great significance of several of these variations for group fertility.<sup>2/</sup> The Jains, with the strictest prohibition of widow marriage, have in recent decades relegated a fifth of their women in the 15-39 age group to celibate widowhood, and in consequence of this and other factors their group is barely maintaining its numbers. The Hindu religion in theory forbids widow remarriage, but the enforcement of this prohibition is largely dependent upon caste status. Among the Brahmins and other aristocratic Hindu castes, there were over 230 widows for every 1,000 married women in 1931, and measurement of fertility for these groups will reflect this separation of a large group of women from marital childbearing. Neither Islam nor Christianity in India forbids widow remarriage, and the more tolerant attitude of these religions is a contributory cause of the higher fertility of their adherents as compared with high-caste Hindus and Jains. Sikhs, too, do not oppose remarriage of widows, and show a correspondingly low proportion of widows in the reproductive ages and an exceptionally high gross fertility rate.

Divorcees, like widows, can be a fertility depressant in any society if their remarriage is proscribed. Divorce, however, unlike the death of a spouse, is itself very much subject to cultural regulation. The whole complex of attitudes towards divorce, the grounds for divorcement, and the ease of remarriage constitute an important culture variable affecting fertility. In general, a casual attitude toward divorce, grounds based on low fertility factors, and an absence of restrictions on remarriage of the divorced partners enhance fertility. If, as among the Ifugao of the Philippines, grounds for divorce include unwillingness to perform the sexual act, permanent sexual disability, barrenness, or continual dying of offspring, an individual is not necessarily denied progeny. If divorce and remarriage are still more casual and common, the opportunity for being married throughout the reproductive ages to a spouse to whom one is intensely attracted sexually is comparatively great. Few societies in Asia prohibit divorce, and in widespread areas of South-East Asia at least, divorce on the basis of mutual consent is common and remarriage widely resorted to. The net effect on

<sup>1/</sup> G.W. Barclay, Colonial Development and Population Growth in Taiwan, (Princeton University Press, 1954).

<sup>2/</sup> K. Davis, The Population of India and Pakistan (Princeton University Press, 1951).

population growth of divorce and remarriage attitudes and practices is often not quite clear, however, because an extremely tolerant attitude may in some social settings lead to family instability which adversely affects fertility and child survival.

It might be noted parenthetically here that, in societies with sex discrimination regarding the remarriage of the widowed and divorced, social change in the direction of equality between the sexes, which in the long run represses fertility, has an important short-term pro-fertility effect, for remarriage of widows and divorcees on a basis of equality with widowers and divorced men increases the number of women in reproductive roles.

Polygamy and the attitude towards plural marriage and alliances represent another cultural variable obviously relevant to fertility but difficult to assess. Polyandry, which occurs in Asia only among the Tibetans and a few tribal groups, notably the Todas of India, may be ignored here. As for polygyny — the institution of plural wives — it is found in most parts of Asia as an approved but never a majority pattern. In general, for every man with more than one wife there must be another who lives in enforced bachelorhood, for the normal sex ratio is nowhere appreciably altered by practices favouring the survival of girl children. This theoretical degree of bachelorhood incumbent on polygyny does not strictly hold, in so far as men have a higher mortality in the marriageable ages, and in so far as there is a considerable differential in age at marriage for men and women. Polygyny as an ideal in a society or as a widespread practice for those who can afford it does tend to minimize spinsterhood — to ensure the maximum marriage rate for women. Furthermore, polygyny enables the richer men who can assure a better survival rate for their children to have a very large number of children, while the attendant enforced bachelorhood generally occurs among those who could provide only the poorest in child care. On the other hand, if in practice most secondary or later wives are taken in marriage by men considerably older than themselves, then their lifetime fertility may be appreciably lower than it would have been if they were married to younger men as only wives. The net effect of institutionalized polygyny on a society's population growth can be assessed only from its full social setting, in conjunction with such other factors as age at marriage, widow remarriage and sexual practices within marriage.

Sexual practices within marriage in the cultures of Asia have been little studied, and the facts are obscure. Most cultures proscribe intercourse during the wife's menstruation and during at least the later phase of pregnancy. While these regulations are obviously irrelevant to fertility, there are other cultural prohibitions relating to the women's menstrual and childbearing cycles which are highly pertinent. In several cultures, the monthly period of abstinence is longer than the actual days of menstrual flow. Since ovulation occurs roughly midway between the onset of the menses, such pro-

hibitions tend to concentrate coitus in the woman's most fertile days. The pilot studies in family planning recently carried out in India uncovered an almost universal injunction against intercourse for an 8-day period after the onset of menstruation, extended in some cases to 12 or 15 days. Abstinence during lactation is culturally stipulated in most societies, but the period considered proper varies from 2-3 months to well over a year. The pilot studies in India found a differential between the urban and the village populations studied, with the city group tending to limit abstinence to three months and the village population generally extending it to six months or more. Among the Arapesh in New Guinea, there is a taboo on intercourse during lactation until the child takes its first steps and the mother has had a full menstruation, a practice which results in a fairly healthy spacing of children.

Cultural proscriptions on intercourse in marriage are seldom limited to the menses, pregnancy and lactation. Many societies require continence before or during military expeditions, hunting trips or harvests. In parts of Melanesia, men sleep near the gardens while the yam vines are being trained and never approach their wives. Among certain tribes in Assam, it is believed that the slightest incontinence so long as the crops are not harvested may have disastrous effects on the yield. Abstinence from intercourse as well as from food is a common part of ritual fasting and particular religious observances. In Theravada Buddhist societies, those who observe the Buddhist holy days coinciding with the four phases of the moon abstain from intercourse. Elsewhere in the orbit of Indian culture, intercourse on full and new moon days is taboo. The pilot family planning studies in India found about half the population observing institutional taboos of a religious nature, with the number of days of avoidance per year ranging up to over 100 in individual cases.

Other aspects of the culture have a more indirect influence on the frequency of coitus in marriage. Different housing and sleeping arrangements are to the point, since almost all peoples consider coitus a private act. The cultural stress laid on virility in certain societies must also be mentioned. Where the men are obsessively concerned with their sexual potency and ashamed to admit any weakness even to their wives, a certain compulsiveness about regular and frequent intercourse may characterize a whole people. There is some evidence of a virility basis for high fertility in several Middle Eastern cultures and among the Chinese. Half the advertisements in Chinese newspapers, in China and overseas, are ordinarily devoted to potency tonics, pills and aphrodisiacs. Authority allocation within the family may also relate to the frequency of intercourse in marriage. Where decisions are jointly made by both partners, the incidence of sexual relations is presumably lower than in cultures where the husband has the say and the right to have his way regardless of his wife's psychological, physical, or emotional state.

## THE CONTROL OF CONCEPTION

All the cultural attitudes and social regulations of sex discussed above, to the extent that they determine frequency and timing of sexual intercourse in a society, operate as conception controls. But if we limit conception control to the narrow meaning of contraception during sexual intercourse, then the cultural values and social sanctions mentioned above can be taken as a major component of the motivation for conception control. Other components usually centre around the health of the mother and a whole range of economic considerations.

In general, in traditional Asian cultures, where children are highly valued and the social and religious sanctions have a high net pro-fertility effect, there is a motivation for resorting to contraception only for extra-marital union and, within marriage, only after the cultural norms for number and sex of offspring have already been reached. The value of spacing children is perceived in certain cultures, but where felt, it is usually enforced by means of culturally sanctioned abstinence during a prolonged lactation rather than by contraception as such. The surveys conducted by the pilot family planning studies in India are very instructive with regard to motivation for contraception. In the village-area studies, for instance, it was found that most couples with less than four children or with no sons were not interested in learning a method of conception control. There was little evidence of a long-term view of family planning which could provide motivation for conception control prior to fulfilling the cultural goals of several children including sons. For this reason, among others, sterilization has achieved a surprisingly wide acceptance in some Asian sub-cultures, such as that of the central Thai.

The chief motivations for wanting to use contraceptive methods after cultural demands have been satisfied are economic in nature. Several studies of densely populated agrarian regions in Asia have been made which show a close relationship between family size and economic status. Where children are highly valued and loved, there is little joy in seeing them fed, clothed and cared for at such a low standard, in terms of local expectations, that a high percentage die. Once the minimum culture demands are met, such families not infrequently resort to folk methods of contraception. In certain societies, the economic consideration has been institutionalized. In Tokugawa, Japan, the Samurai were enjoined to limit their families so that their high position in society could be maintained on the modest stipend the feudal system gave them. In other high-status sub-cultures, where primogeniture is not followed and more equal inheritance obtains, the relation between family limitation and perpetuation of the group's social position is recognized.

It should be noted in connexion with the future of contraception in Asia that, except for Roman Catholicism, which is important only in the Philip-

pinas and part of Viet-Nam, the world religions followed in Asia have taken no doctrinal stand against control in marriage. Neither Hinduism, Buddhism nor Islam has definite tenets opposing contraception, but neither are these organized religions positive factors in building up motivation for family planning.

Virtually every traditional society has in its cultural inventory techniques aimed at contraception during intercourse. Perhaps the most widely known of these is *coitus interruptus* or withdrawal. Others rely on chemical or herbal concoctions taken internally or on chemical dousing or physical obstruction of the vaginal passage. Various contraceptive devices are described in the literature of all the major Eastern civilizations and in the folklore of a myriad of other Asian cultures. There is no need to describe them here, except to point up the fact that, so far as is known, none is both practical and reliable at any high level of efficiency. More reliable contraceptive devices have in recent decades been introduced to Asia from the West, but outside the major urban centres, industrialized Japan, and the essentially European Israeli society, they have not been widely accepted in Asia. Considerations of motivations aside, the cost alone is usually prohibitive.

One should also mention that practices are sometimes followed in the culturally-based belief that they are contraceptive when in fact their effect may be just the reverse. Among these are beliefs that women cannot conceive during lactation even after the resumption of menstruation, and that it is during the days immediately following the conclusion of the menses that conception is most likely to occur.

## THE POST-CONCEPTION REGULATION OF CHILD SURVIVAL

The proportion of children conceived who eventually enter child-bearing adulthood is also greatly influenced by cultural attitudes, preferences, and practices which vary from one society to another. The discussion will now turn to this borderline area overlapping both fertility and mortality that relates to foetus, infant, and child survival. Attitudes toward pregnant women and towards induced abortion, and knowledge of maternal care and abortion techniques are the chief cultural variables affecting foetus survival. In many, if not most, societies, the pregnant woman receives special attention, a rich diet, and a relief from the more arduous of the women's duties. The execution of such a cultural ideal, however, is often attenuated in densely populated societies practising intensive agriculture. In rural China, for instance, a pregnant woman is said to have "happiness in her body" and is entitled to special treatment, but in the poor peasant's family dietary improvements can only be minimal, and in the interests of family survival she may have to continue arduous work up to the very time of the expected birth. Whether or not abortion is resorted to is not only a matter of individual motivation but

one of cultural tradition and culturally available techniques. Several cultures have folk knowledge of fairly efficient abortifacients and an important tradition of fertility control through induced abortions. Japanese literature of the Tokugawa period contains information on abortion, and specialists in Japanese demography find it difficult to explain the post-war upsurge in the Japanese abortion rate without assuming a strong positive sanction in the traditional overt culture. By contrast, the neighbouring Koreans are said to have an ingrained abhorrence of abortion. The pilot family planning studies in India revealed a surprisingly high abortion rate and a strong reluctance to discuss the matter. An important feature of abortion as a fertility control is that it can be practiced by women without the knowledge of their husbands. A high incidence may therefore be found where male authority patterns are strong within the family.

Resort to infanticide, on the other hand, is usually made with the knowledge of both parents. Infanticide, as opposed to abortion, can make distinctions based on sex, and this feature helps explain its use instead of other means of fertility control in many pre-modern Asian societies with a strong preference for children of a particular sex. In pre-Meiji Japan, female infanticide was widespread, being graphically referred to as *mabiki*, the term which describes the thinning of rice shoots. This reflects a more disciplined view of life, perhaps, than found in pre-modern China, Korea or Viet-Nam, where female infanticide was resorted to only in cases of sheer economic peril, when another mouth to feed would mean disaster. Only a few societies have institutionalized infanticide as a regular feature of socio-demographic balance. The Todas of India are the most notable example; in congruence with their preference for polyandry, they regularly practiced female infanticide, creating an extremely artificial sex ratio.

General infant survival, leaving sex differentials aside for the moment, is related to an unending series of culture elements in the realm of child and maternal care. Some of these variables have been quickly noticed by medical men, such as the traditional use throughout most of South-East Asia of a freshly made bamboo knife to cut the umbilical cord, as opposed to the tetanus-carrying metal knife commonly used by midwives in rural China. Without going further into the cultural basis of public health, however, I should like to emphasize the importance of certain aspects of social structure on child survival. In societies living at close to a subsistence level, any social arrangement which either obligates the wealthier families to aid any of the poorer families, or transfers children from poorer to wealthier families, raises the survival rate of children. Consanguineous descent groups and adoption practices function in many Asian societies to just that end. In a typical Chinese village, the localized lineage of a nation-wide same-surname group probably includes families with widely varying land holdings and other economic

resources. Intra-lineage obligations require the wealthier families or the local clan organization to help out even distantly related poor families in their lineage when the latter are faced with impending starvation. In other cultures, such mutual aid may not be institutionalized at all.

The effect of widespread adoption practices on child mortality and indirectly on fertility is perhaps more apparent. Not all couples in cultures that strongly encourage childbearing actually do have children, and some who do may have children of only one sex. In Chinese, Indian and other Asian cultures, intricately involved adoption procedures are available to remedy this situation. A sonless couple is almost compelled in China to adopt a boy to succeed to the ancestral cult duties and carry on the family line. He may be adopted as a son or as a son-in-law later to be married to a daughter. He will usually be taken from a large family of lower economic status. In any case, it is the wealthier families who more often adopt children in China, because the transaction involves the exchange of money. Adoption of daughters is a luxury that only rich couples would indulge in. Adoption, then, often works out as a means whereby poor families with many children can place one or more of them in families where they will be economically better off. It provides economic alleviation for families with high fertility, and thus raises the child survival potentiality of the whole society. Adoption is so commonly resorted to in China, Japan, Korea and Viet-Nam that up to one-sixth of family heads in villages in these societies may prove to be adoptive sons or sons-in-law. In India, too, the types of culturally sanctioned adoption are myriad, if perhaps not quite so widely resorted to.

The survival of children in societies near to the subsistence level is also conditioned by the relative cultural value placed on boys and girls. Nowhere is this more apparent than in China. In Taiwan, some ten years after the Japanese began a development programme that altered sharply the conditions of living and pressures on subsistence, 812 of every thousand males who passed their first birthday survived to the age of ten, while the corresponding figures for girls was only 769. In a Chinese market-town area studied by the writer, the sex ratios for ages 5-20 were all over 120. The major explanation of this surplus of boys after infancy can be none other than differential treatment based on sex, which operates mainly through denying to girls the same subsistence and health advantages given to boys. A mother may unconsciously come to love sons more than daughters because birth of the former enhances her status in the eyes of her husband and the community; hence she may give preferential feeding and treatment to her sons. Boys are given the first opportunity to attend school, while girls still, for the most part, must stay at home and work hard for subsistence. In peasant homes, sons are early allowed to move to the head table with their father and other adult males and guests, where the diet is appreciably better, while daughters are commonly

relegated to the table for hired labourers and babies. Differential treatment of this kind is perhaps inevitable in all societies that strongly favour boys and live at or near the subsistence level.

Once again it should be noted that social change in the direction of sex equality, in such cultures as the Chinese, has an important pro-fertility consequence, namely, that the proportion of female infants who reach child-bearing age rises toward the level for males, thus enabling more men to marry or marry earlier.

#### ATTITUDES AND PRACTICES REGARDING HEALTH AND MORTALITY

To turn now to the cultural factors affecting adult health and mortality, it is perhaps possible to state that all cultures place a high value on good health and the prolongation of life, without demographically important distinctions. This being the case, and in order not to stray far into the area of public health, merely a few kinds of culturally specific differences relating to mortality in Asia will be illustrated. With regard to diet, one might note the exclusive preference for polished white rice held by most Asian peoples as opposed to the continued use of the more nutritious home-milled rice by various tribespeople in northern South-East Asia. There are also important nutrition differentials resulting from methods of food preparation, for instance the Indian as opposed to the Chinese method of cooking rice. Cultural bans on the consumption of certain foods may be important, such as those on eggs, poultry and meat in certain Indian castes. In the realm of personal hygiene, great cultural differences are found. The author once spent a winter with a poor farm family in South-West China, and saw no sign that any member of the family once took a bath. This would be unthinkable in a Japanese peasant family living in a comparable climate, even at the same season. Susceptibility to various diseases is often partly a product of cultural attitudes and practices. The use of night-soil in agriculture, widely resorted to by some Asian cultures and eschewed by others, creates a tremendous health problem. The seclusion of women in many Middle Eastern countries and the institution of purdah in India help give women in these societies a higher tuberculosis rate than men, quite the reverse of the situation in most other countries. General morbidity is encouraged by cultural practices acceptable in one society but frowned on or forbidden in others. Opium smoking is an illustration here. In Taiwan in 1905, about one-fifth of the local men over thirty years of age used opium, a rate probably matched in parts of South-West China in recent years. The spread of contagious diseases is facilitated by religious pilgrimages undertaken regularly by some social groups. The great Hindu religious festivals have often provoked outbreaks of cholera, which are avoided by other groups in India such as the Sikhs, who forbid pilgrimages. Even suicide has a cultural base. In traditional Japanese culture, suicide symbolized

primarily the taking of responsibility, while in Chinese and many other cultures it is the protest par excellence against existing conditions. Sutte is a peculiar Hindu form of suicide. In still other societies, suicide has no recognized purpose or function.

#### CULTURE AND MIGRATION

It is necessary to say only a word about the effect on migration of the cultural values and practices as narrowly defined in this paper, for it is clear that the course of inter-society migration in Asia has been primarily dependent upon economic and political factors. The gross differences in the economy of emigrating and immigrating societies has been the moving force, while it was national legislation and government policy which encouraged, restricted, or cut off the flow. Aside from the overland migrations within existing political boundaries, such as those of Chinese into Manchuria and Vietnamese into Cochin-China, the major Asian migrations in the past century have been those of South-Eastern Chinese to South-East Asia and the New World, of Indians to lands bordering on the Indian Ocean and the Caribbean, of Koreans to Japan and Manchuria, and, on a smaller scale, of Japanese to the New World and their former "Empire". In all of the major international migrations, the role of non-economic and non-political factors has been primarily negative. In the usual case, one can turn to these narrowly cultural factors for an explanation why, in the absence of governmental restrictions, these migrations were as modest as they turned out to be.

Foremost among the cultural obstacles to emigration are the kin and locality ties of the potentially emigrant peasant peoples. Short of very compelling reasons, the Chinese does not leave his native village and desert his duties in the ancestral cult by leaving the site of the lineage graves and clan temple. In fact, an analysis of Chinese migration clearly shows that the emigrant Chinese of South-East China went abroad originally only because the wealth more readily acquired there was a short cut to fuller achievement of traditional culture goals at home. In addition to similar general considerations, Japanese were tied by the Shinto religion to their home areas, since the religion in its animistic base was so closely related to specific features of the Japanese landscape. For the Indians, the caste system itself was a massive deterrent to emigration. As Davis points out, castes have geographical as well as social boundaries, and emigration removes a man from his local caste group.<sup>3/</sup> In a foreign society he must inevitably break caste restrictions, and on his return home is looked at askance on suspicion of having done just that.

The sharp cultural differences which emigrants found in most potential immigrant countries also discouraged migration. It is hardly necessary to

<sup>3/</sup> K. Davis, op. cit.



note that Chinese immigrants to Indonesia, Indian immigrants to Burma, and Japanese immigrants to California found adjustment more difficult because of cultural disparity than did European immigrants to the United States. Outright hostility based on cultural stereotypes was more common than not.

At the present time, political policy has reduced international migration in Asia to a trickle, and the cultural factors relevant to migration have only a theoretical effect on population growth.

#### SUMMARY AND CONCLUSION

In conclusion, it might be well to review briefly the kinds of information in the cultural realms of family and kin, religion and value systems that are needed for an informed approach to Asia's population problems, and then to suggest means for obtaining such data.

With regard to the valuation of children in any society, one should ascertain the priority which the value placed on offspring holds relative to other cultural values; the religious, ethical, kinship and prestige sanctions reinforcing that valuation; the number of children considered ideal; and the degree of preference, if any, for children of a particular sex. The importance for fertility of cultural expectations concerning premarital chastity and age at marriage, of the presence or absence of approved polygamy, of attitudes towards and grounds for divorce, and of the availability of rewarding sexual roles outside of marriage for persons of reproductive age, have all been pointed to in regard to the regulation of sex. Of special importance in the last respect are the attitudes toward the remarriage of the widowed and divorced, and norms and expectations concerning such celibate statuses as those of priests, monks and nuns. As for the regulation of sexual intercourse within marriage, one must describe all the culturally enjoined reasons for abstinence - those relating to the woman's monthly cycle and to the pregnancy-lactation cycle, and those relating to special religious, ceremonial and social events and observances. Other important factors concern the relative equality of male and female authority patterns in the family, the amount of concern with virility, and the degree of privacy afforded cohabiting couples. Aside from these cultural factors affecting the frequency of coitus, one should ascertain the cultural inventory of practices and devices believed to prevent conception during intercourse and the specific motivation of those attempting to prevent conception, as well as attitudes regarding the propriety of birth control.

With regard to post-conception practices relevant to child survival, one must note the special treatment accorded to pregnant women, determine the reasons for any preference or tendency to resort to abortion or infanticide as opposed to contraception, and describe the effects on health of birth practices and neonatal care. Stress has been laid on the importance for child survival - in

societies with low living standards - of social arrangements which provide economic alleviation for families with high fertility, in particular, adoption and institutionalized aid on a kinship basis. With regard to general mortality, we should like to know details of diet, accepted standards of sanitation and housing, medical practices, magical and religious beliefs affecting health, and the existence of any cultural practices favouring morbidity, such as opium smoking and purdah, or favouring mortality, such as functional suicide. As for emigration, we must ascertain the intensity of locality, community and local kin ties, and the priority of these valuations vis-à-vis other cultural goals. Of primary importance with regard to immigration is the intensity of community in-group feelings and of general ethnocentrism.

These kinds of information are what we would like to know about each of the major cultures within the nations of Asia. But how are such data to be obtained? Much more than we now know about the manifestation of certain cultural norms can be learned through the revision of census schedules and procedures. There is no need to point out to the group attending this Seminar the tremendous utility of demographically oriented social surveys. The possibilities of attitude surveys, culturally sophisticated sample censuses, and demographically sophisticated cultural surveys have been demonstrated in more than one Asian country, most notably India.

It should be apparent, however, that the very nature of much of the desired information and the close functional interrelation of the pertinent factors indicate the need for a more intensive approach. A somewhat modified form of the anthropological community study might well be the most efficient way to obtain such data. In the usual community study, a researcher or a research group, after selecting a village or community typical of a large culture area, moves into the community and lives among the people being studied. Through methods ranging from unstructured interviews and questionnaires to participant observation, the data are collected which make possible a description of the integrated institutional patterns there operating. Community studies, like others, are perforce limited in emphasis, and there is no inherent reason why the primary emphasis of such studies should not be population dynamics. Several community studies, such as those Cornell University is conducting in Thailand and India, have clearly demonstrated the feasibility and fruitfulness of collaborative work between various specialists and anthropologists. With the co-operation of demographers, it should be possible to attain integrated descriptions of village life which relate public and intimate behaviour to value systems and to demographic statistics. Armed with such data, in addition to the results of improved censuses and expanded social surveys, Asia's population problems, in their cultural aspects, can be approached with the knowledge and intelligence their difficulty demands.

# GROWTH OF POPULATION AND PUBLIC HEALTH PROGRAMMES IN ASIA AND THE FAR EAST

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in Asia and the Far East

## INTRODUCTION

In the year 1954 the area comprising Asia and the Far East had a total population of about 1.45 billion persons, constituting approximately 55 per cent of the total estimated population of the world.

In this area the population is, in the main, concentrated in three regions: about one third is in Burma, India and Pakistan; more than a third in China, largely in the Yang-tse and Yellow River valleys; the rest in the islands and peninsulas, viz. Japan, Ceylon, Indonesia, Thailand, Malaya, etc. The interior of the continent is largely uninhabited. Table 1 gives the most recent population estimates for individual countries of more than

two million inhabitants. The remaining countries and territories have been grouped. The figures are based on the data published in the United Nations Demographic Yearbook, 1955. For the mainland of China the population figure is that relating to the census of June 1953.

Among the "other countries and territories" in Table 1, the following are the ones with populations larger than 2,000,000, for which similar estimates for 1954 are not available. The latest official estimates of populations are as follows:

Afghanistan	12,000,000 as of 1 July 1951
Saudi Arabia	7,000,000 as of 1 July 1952
Yemen	4,500,000 as of 1 July 1949

TABLE 1. POPULATION ESTIMATES FOR INDIVIDUAL COUNTRIES AND TERRITORIES IN ASIA AND THE FAR EAST: 1954

Country	Midyear 1954 estimate (in thousands)	Percentage of total world population
China, mainland (1953)	582,603	22.0
India	377,000	14.2
Japan	88,000	3.3
Indonesia	81,100	3.1
Pakistan	80,167	3.0
Korea	31,000	1.2
Viet-Nam	26,000	1.0
Turkey	22,949	0.9
Philippines	21,440	0.8
Iran	20,721	0.8
Thailand	19,925	0.8
Burma	19,242	0.7
Taiwan	8,617	0.3
Nepal	8,432	0.3
Ceylon	8,385	0.3
Malaya, Federation of	5,889	0.2
Iraq	4,948	0.2
Cambodia	4,100	0.2
Syria	3,670	0.1
Hong Kong	2,277	0.1
Other countries or territories	35,000 <sup>a/</sup>	1.3
Asia total	1,451,000 <sup>a/</sup>	54.7

<sup>a/</sup> The last three digits have been rounded. Population figures for the Asiatic part of the USSR are not available.



Divided as this area is into a large number of countries or territories, it exhibits an extreme degree of heterogeneity from the demographic and health points of view. On the one hand, for instance, it includes two of the most populated countries of the world, namely China and India, and on the other, certain insular territories whose populations hardly exceed a few thousand. It includes countries having comparatively well-developed health services, as well as certain countries or territories where living conditions still continue to be almost primitive. It includes some of the most densely populated areas of the world (Java, for instance), as well as some of the most sparsely populated zones.

It would therefore seem hazardous, if not altogether impossible, to attempt any broad generalizations relating to trends in population growth or development in public health work.

For the purpose of the present study, however, a selection of certain countries in this area can be made and the demographic and health changes that have been or are being brought about in the period following the Second World War can be examined. This post-war period is of special importance as it is characterized by the attainment of political independence or the general awakening of a large mass of population, as well as by the unprecedented flow into the area of both financial and technical assistance from international and other outside sources with a view to improving the standard of living of the people. As a matter of fact, the factors that would now seem to contribute to demographic changes and general health development in the post-war period do not seem to have had any parallel in the past. The problems of new Asia and the Far East are indeed being tackled largely in a new manner. Even though clear trends in such developments may not always be statistically fully discernible, it is appropriate to record what has already taken place in the post-war decade and to make some statements about the changes likely to occur in the immediate future.

The selection of countries included in this study is governed largely by consideration of availability of vital and health statistical information. In this area the most recent censuses have been undertaken in the following countries in the years shown in parentheses: Ceylon (1953), China (1953), India (1951), Iraq (1947), Japan (1950), South Korea (1949), Pakistan (1951), Philippines (1948), Thailand (1947), Turkey (1950). Vital statistics on a national basis are available for a long enough period only for Ceylon, India, Japan, Philippines, Taiwan, and Thailand. These, therefore, are the countries selected for study. Of course, in several tables which follow figures for other countries are also included wherever available. It is unfortunate that for three of the large countries, namely, China, Indonesia and Pakistan, the relevant vital and health statistical information on a national basis is not available for a long enough period, or not available at all. Further, it must be recognized that even though, for the countries included in this study, official figures are known, they are subject to varying, and in some cases considerable, degrees of error in both their quality and completeness of coverage.

For these reasons estimates of various statistical rates are not to be regarded as comparable from one country to another; they can perhaps at best provide some indication of the trends in operation.

#### GROWTH OF POPULATION

In studying the growth of population in the above-mentioned countries in the post-war period, it may be well first to set out some basic facts relating to or indicating comparative rates of population increase.

Table 2 shows the figures of population in 1920 and 1954 for various continents based on data derived from the United Nations Demographic Yearbook, 1955.

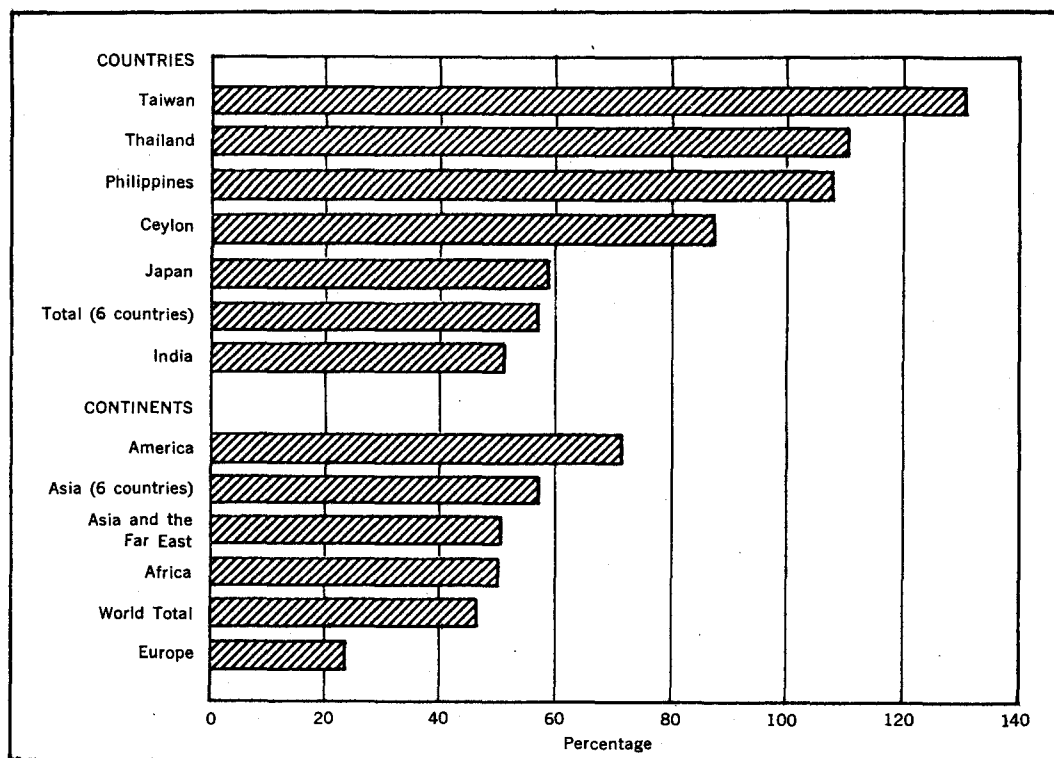
TABLE 2. POPULATION BY CONTINENTS: 1920 AND 1954

Continent	1920		1954		Per cent increase from 1920 to 1954
	Population (in millions)	Percentage of world population	Population (in millions)	Percentage of world population	
Africa	140	7.7	210	7.9	50.0
America	208	11.5	357	13.5	71.6
Asia and Far East <sup>a/</sup> of which six selected countries	967	53.4	1,451	54.7	50.1
Europe <sup>b/</sup>	328	18.1	404	15.2	23.2
Oceania	8.8	0.5	14.4	0.5	63.6
USSR	158	8.7	214	8.1	35.4
World total	1,810	100	2,652	100	46.5

<sup>a/</sup> Including Turkey, but excluding Asiatic part of USSR.

<sup>b/</sup> Excluding the USSR and the European part of Turkey included in Asia.

FIG. 1. PERCENTAGE INCREASE OF POPULATION FOR 1920 TO 1954 BY COUNTRIES IN ASIA AND THE FAR EAST, AND BY CONTINENTS



It is to be noted that in both 1920 and 1954 the population of Asia and the Far East was in about the same proportion, viz. 53.4 per cent and 54.7 per cent of the world total. Further, the last column of Table 2 indicates that the increase of total population from 1920 to 1954 in Asia and the Far East was of about the same order of magnitude as for the world as a whole. Relatively more rapid increase has been recorded in the continent of America than in Asia and the Far East. The rate of increase has been the slowest - 23.2 per cent - in Europe (excluding USSR).

Similar comparison of the rate of population increase from 1920 to 1954 in the six individual countries of Asia and the Far East chosen for this study is made in Fig. 1. In three areas, Taiwan, Thailand and the Philippines, this increase has been

over 100 per cent. A relatively high rate is also observed for Ceylon.

Inasmuch as part of this increase in some countries may have been occasioned by migration, it is of interest to examine the rates of natural increase (birth rate minus death rate) of population. The rates of natural increase during the period 1921-1954 for individual countries are shown later in Table 5, from which Table 3 has been derived. Table 3 compares the rates of natural increase in the pre-war period, 1921-1940, with the post-war period, 1946-1954. It must be remembered that these data are based on registered births and deaths, which are incomplete for several of the countries selected.

TABLE 3. PERCENTAGE RATES OF ANNUAL NATURAL INCREASE DURING THE PRE-WAR AND POST-WAR PERIODS IN CERTAIN COUNTRIES OF ASIA AND THE FAR EAST

Country	Pre-war period 1920-1940		Post-war period 1946-1954		Difference in post-war and pre-war rates of natural increase
	Years	Annual natural increase per 1,000 population	Years	Annual natural increase per 1,000 population	
Ceylon	1921-40	13.4	1946-54	26.1	+ 12.7
India	1921-40	9.5	1946-53	9.8	+ 0.3
Japan	1921-40	13.0	1947-54	16.8	+ 3.8
Philippines	1926-40	15.1	1946-51	18.4	+ 3.3
Taiwan	1921-40	22.2	1947-54	31.6	+ 9.4
Thailand	1922-40	16.5	1946-53	16.0	- 0.5

In the last column of Table 3, the difference between the averages of post-war and pre-war rates of natural increase is given. This difference measures, as it were, the rate of acceleration in natural increase. With the exception of Ceylon and Taiwan, the increases shown in this column for other countries are of a relatively low order of magnitude. India, for instance, has an almost insignificant annual acceleration of 0.3 per 1,000 population and Thailand a negative figure. Thus, for most of these countries the level of the natural increase has been kept almost constant after the Second World War. A study of the rates of natural increase given in Table 5 shows the rather peculiar position of Japan, where the natural increase was high in the years immediately following the termination of the Second World War, but a rapid fall occurred thereafter to the pre-war level.

The increase in population in the first fifty years of the present century in certain countries of the world for which comparable data are available is shown in Table 4.

Special observations in respect of some countries in Asia and the Far East follow. They are based largely on the figures given in Table 5 on the rate of natural increase during the period 1921-1954 in individual countries.

#### Ceylon

While the birth rate has remained at about the same level throughout the period covered in Table 5, there has been a considerable decrease in the death rate in the post-war years, leading to an accelerated rate of natural increase of population. In 1946 a campaign against malaria by the use of DDT was commenced, which is believed to have contributed largely to the reduction in the death rate.

#### India

The large size of this country naturally leads to relatively large additions of population through

TABLE 4. PERCENTAGE INCREASE IN POPULATION IN THE FIRST FIFTY YEARS OF THE PRESENT CENTURY IN CERTAIN COUNTRIES.

Country and period	Percentage increase in population
Canada, 1901-51	160.4
New Zealand, 1901-51	137.7
Australia, 1901-51	123.4
Ceylon, 1901-51	117.1
United States, 1900-50	98.3
Mexico, 1900-50	89.5
Japan, 1900-50	87.5
Denmark, 1901-50	66.4
Portugal, 1900-50	55.7
India, 1901-51	51.5
Spain, 1900-50	50.5
Norway, 1900-50	46.4
Switzerland, 1900-50	42.2
Italy, 1901-51	40.4
Sweden, 1900-50	37.1
England and Wales, 1901-51	34.5
Scotland, 1901-51	14.0
France, 1901-51	3.7
Ireland (Republic), 1901-51	- 8.1 <sup>a/</sup>

<sup>a/</sup> Decrease due to emigration. Birth rate remained higher than the death rate throughout the period 1901-51.

natural increase. The registered birth rate, which stood at the level of 33-34 per thousand before the Second World War, dropped to the level of 25-27 per thousand after the war. The registered death rate showed a similar drop in the post-war period, thus keeping the natural increase rate at about the same level throughout these 30 years <sup>1/</sup>

<sup>1/</sup> Both births and deaths are known to be under-registered. Moreover, "registration areas" do not include the whole country.

TABLE 5. ANNUAL RATE OF NATURAL INCREASE PER 1,000 POPULATION: 1921-1954.

Period	Ceylon	India	Japan	Philippines	Taiwan	Thailand
1921-25	11.4	6.7	12.8	-	17.6	13.2 <sup>a/</sup>
1926-30	15.3	9.1	14.2	14.4	22.6	14.8
1931-35	12.2	10.9	13.8	15.0	24.4	18.2
1936-40	14.5	11.2	11.5	16.0	24.0	19.0
1941-45	17.1	5.6	14.6 <sup>b/</sup>	-	23.1 <sup>b/</sup>	15.6
1946	18.0	10.1	-	13.8	-	9.0
1947	25.0	6.9	19.7	17.7	19.4	10.3
1948	27.3	8.2	21.7	18.8	25.4	13.2
1949	27.2	10.6	21.2	19.4	29.3	17.3
1950	27.8	8.8	17.3	21.0	31.2	18.4
1951	27.6	10.5	15.4	19.8	38.3	19.0
1952	27.5	11.2	14.6	-	36.7	19.4
1953	28.5	11.7	12.6	-	35.8	21.6
1954	25.8	-	11.9	-	36.4	-

-/ Information not available.

<sup>a/</sup> For the period 1922-25.

<sup>b/</sup> For the period 1941-43.

## Japan

As is shown by Table 5, in the pre-war period the average annual rate of natural increase remained fairly steady, being of the order of 13 to 14 per 1,000 population. In the post-war years an increase occurred, the rates for the years 1947, 1948 and 1949 being 19.7, 21.7 and 21.2 per 1,000 population. This happened because the birth rate had remained at its pre-war level while a significant decrease occurred in the death rate. In July 1948, the Eugenic Protection Law was passed, legalizing artificial interruptions of pregnancy and sterilizations for stipulated socio-medical reasons. The total number of artificial interruptions of pregnancy performed each year since 1949 under the provisions of this law are shown in Table 6. The last column of this table gives annual figures for "eugenic operations", i.e., sterilization, mostly of women.

TABLE 6. TOTAL ARTIFICIAL INTERRUPTIONS OF PREGNANCY AND EUGENIC OPERATIONS IN JAPAN: 1949 TO 1954.

Year	Artificial interruptions of pregnancy	Eugenic Operations
1949	246,104	5,695
1950	489,111	11,403
1951	638,350	16,233
1952	798,193	22,424
1953	1,068,066	32,552
1954	1,143,059	38,056

According to Muramatsu and Ogino, the above figures of artificial interruptions of pregnancy are underestimates because of incomplete reporting.<sup>2/</sup> They state that a rather conservative estimate for 1953 would be a figure lying between 1.5 and 1.9 million and for the year 1954 a figure lying between 1.8 and 2.3 million. Further, according to Koya *et al*, the actual figures of eugenic operations, i.e., female sterilizations, may amount to five to ten times the reported number.<sup>3/</sup> They state that the loss of anticipated births by 1960 from the operations performed during 1949 through 1953 would amount to about 700,000. They add that, "Since sterilizations may well continue from 1954 to 1960, total reductions in live births associated with the sterilization of women may assume major proportions by the year 1960".

<sup>2/</sup> M. Muramatsu and H. Ogino, "Estimation of the Total Numbers of Induced Abortions as well as of Sterilization Operations for Females in Japan, for the Years of 1952 and 1953", *Bulletin of the Institute of Health*, vol. 4, Nos. 1-2, (1954), pp. 10 to 11.

<sup>3/</sup> Y. Koya, M. Muramatsu, S. Agata and N. Susuki, "A Survey of Health and Demographic Aspects of Reported Female Sterilizations in Four Health Centres of Shizuoka Prefecture, Japan", *Milbank Memorial Fund Quarterly*, vol. XXXIII, No. 4 (October, 1955), pp. 368 to 392.

Even the official figures for the years 1953 and 1954 indicate that the numbers of such interruptions of pregnancy exceeded one million each year, a figure equal to almost 50 per cent of the annual live births in Japan in the pre-war period. This has had a great influence in reducing the birth rate and accordingly also the rate of population growth. The rate of natural increase in 1954 had thus fallen to about half the figure of 1947-1949, in spite of an appreciable decrease in the death rate; a consistent decrease in the rate of natural increase took place since 1948.

## Philippines

In the pre-war period 1926-1940, the rate of natural increase, as measured by registered vital statistics, had remained almost at a constant level of about 15 per thousand per year. In the post-war years, this rate has shown a tendency to increase. This increased rate is due to a decreasing death rate, the birth rate remaining at the pre-war level.

## Taiwan

In the pre-war period the rate of natural increase of population was high, being of the order of about 20 per 1,000. The birth rate was at a level of more than 40 per 1,000 population and the death rate was decreasing rapidly. Since the end of the Second World War, the death rate has registered a further decrease to one-half of the pre-war level, while the birth rate has not declined. In 1951 the birth rate was 49.9 per 1,000, the highest figure ever recorded in Taiwan's vital statistics. The natural increase rate has risen in recent years to a high level of more than 36 per 1,000 population.

## Thailand

In the decade or so preceding the Second World War and also during the war years, the registered birth rate was over 30 per 1,000. The years 1946-48 recorded a rate lower than 25, but since 1950 the rate has been nearly 30. The death rate has decreased in post-war years. The natural increase rate has thus shown a consistent increase from 1946 onwards, rising from 9.0 in 1946 to 21.6 in 1953. These figures must, however, be interpreted with caution, as registration of births and deaths is not complete.

## COMMENTS ON RECENT INCREASES IN POPULATION

With undiminishing, or in some cases rising, birth rates and with an appreciable reduction taking place in the death rate, it is clear from the figures given in previous tables that the gap between the two rates has widened, a trend sometimes regarded by writers as "alarming". This phenomenon has doubtless been viewed with apprehension by many writers, some of whom have even gone to the extent of putting the blame on public health workers, so much so that they have been dubbed dangerous doctors who are biological illiterates. As Vogt has stated, sanitarians are "... setting the stage for disaster and like Pontius Pilate washing their

hands of the consequences".<sup>4/</sup> The implication of these opinions is that we must slow down or stop our efforts to control important diseases.

While it is not the purpose of this paper to analyze or discuss such statements, which could well be debated from several points of view, it seems necessary to state that these apprehensions are not based on any sound scientific knowledge regarding the possible future behaviour of the complex biological phenomena of population growth in relation to a decreasing death rate. For instance, to what extent the introduction of modern scientific methods (of which public health techniques are one part only) in a relatively under-developed society can result in better production and in raising the standard of living cannot be easily judged at this moment.

To quote only one viewpoint, Russell states: "These benefits of better education and more productive agriculture and industry have been obvious social needs for a long time. But they cannot be much developed in a community where disease is unchecked. Also, it is the absence of public health, with resultant high death rates, which has fostered the growth of social systems responsible for high birth rates. For these reasons, among others, the problem of population densities will not be solved by neglecting to suppress disease at home or abroad, but utilizing deliberately those forces which heedlessly destroy human lives and cultural institutions. Rather, let modern health practice be a major activity around which other public services will combine their efforts to change the social fabric for the common good .... And, it is reasonable to believe that we can bring about the necessary social changes more quickly and more thoroughly where control of disease is most effective, where our specialized practice is best developed. Of course, one cannot expect a perfect timing of effort which would completely avoid population pressure. The world needs to-day not more disease but more vision!"<sup>5/</sup>

There is also abundant evidence to prove that poverty and disease form a vicious circle. "Men and women were sick because they were poor; they become poorer because they were sick, and sicker because they were poorer .... It is certainly clear that the cost of preventable diseases imposes a staggering burden upon the human race".<sup>6/</sup> This quotation is from Winslow, who has set out a number of valid answers to those who are apprehensive of expanding health programmes in countries of this area.

<sup>4/</sup> W. Vogt, Road to Survival (New York, Wm. Sloane Associates, 1948).

<sup>5/</sup> P. F. Russell, "Public Health Practice and Population Pressure in the Tropics", American Journal of Tropical Medicine, vol. 1, No. 2 (March, 1952) pp. 177 to 181.

<sup>6/</sup> C. E. A. Winslow, The Cost of Sickness and the Price of Health, World Health Organization: Monograph Series. No. 7 (Geneva, 1951).

When faced with the high or accelerating rates of natural increase, it has of course been customary, at least for some writers, to argue that inasmuch as this increase may have been brought about largely by control over the death rate, a corresponding control of the birth rate is called for to keep the rates of increase in check. It is not the purpose of this paper, however, to touch upon the problem of birth rate.

It must be pointed out that in studying the growth of population from the public health viewpoint, it is necessary to take account also of the fact that a control of the death rate inevitably brings about, and in a much greater degree, a control of the sickness rate. For instance, if in a community malaria is eradicated, then for every single life saved from malaria there are as many as 80 to 100 more lives assured of a malaria-free existence. The number of persons freed from the disease is thus much greater than the number saved from death. Speaking generally, therefore, while one of the recorded effects of public health measures is a drop in the death rate, a yet not fully recorded effect is a considerably larger addition of healthier individuals to society. The major achievement of large-scale public health programmes, therefore, is the increased working capacity they impart to masses of diseased individuals who instead of being a drain on the society are in a position to prove an asset. To what extent this relatively larger addition of healthier individuals can contribute not only to their own future well-being, but also to the maintenance of the relatively fewer additional numbers saved from dying, is a subject well worth further study. It is necessary to mention this consideration because in dealing with a complex phenomena such as population growth, a study merely of the difference between birth and death rates should not ignore the factor of accelerated increase of productive capacity of the population. It is true that health programmes add to the number of mouths to be fed but they also add, and in a larger measure, to the hands which can produce the necessities for better living.

#### MAJOR HEALTH PROBLEMS OF COUNTRIES IN ASIA AND THE FAR EAST

Owing to the paucity of qualified persons for properly diagnosing various diseases or causes of death in many countries in this part of the world, as well as to the poor facilities for recording statistical information, it is difficult, if not altogether impossible, to make any clear statement about the health problems in many of these countries. However, as is indicated below, it is generally well-known that in this part of the world there are certain diseases so widespread, and affecting so high a proportion of the population, that they virtually assume a dominant role in hindering social and economic development and even mask other diseases to the point of making them clinically relatively irrelevant until these

mass diseases are removed. The Preliminary Report on the World Social Situation stated that these diseases "may be regarded as the tangle, the jungle or undergrowth of disease which has to be cleared before a country has a fair chance of development".<sup>7/</sup> The foremost problem facing health workers, therefore, has been to recognize what these mass diseases in different countries of this area are.

In the absence of any national system for the reporting of morbidity, and with a poor system for recording causes of death, only indirect evidence is available about their relative importance. An important source of information is from records of cases treated at various hospitals and dispensaries. Other sources are surveys or studies carried out by various workers; in this connexion the information provided by Simmons et al and by Balfour et al is of value.<sup>8/</sup>

In their study of Global Epidemiology, Simmons et al state what the diseases of major public health importance in each country are, this assessment being made from information "drawn from official publications of local governments and international agencies, from scientific papers published in America and foreign journals, from books dealing with general and specific problems of the area, from miscellaneous reports of surveys made under the auspices of the various United Nations organizations, and from data obtained through correspondence and conferences with medical and health authorities living in, or otherwise familiar with, the different territories". Balfour et al have tried also to appraise the major diseases in certain countries of the Far East, after carrying out a "reconnaissance" in selected countries in 1948. Even though the statements appearing in these publications are of a general nature, they do serve to indicate priorities for public health work. For the purpose of this study, a table has been prepared (Table 7) in which, for each country, the diseases mentioned by these workers as constituting the major health problems are marked with two asterisks (\*\*). Diseases which do not constitute a major health problem, but are considered as the mass diseases in the area, are indicated with a single asterisk (\*). In the preparation of this table, some further and more recently published information available in respect of patients treated in hospitals and dispensaries has also been utilized.

7/ United Nations, Preliminary Report on the World Social Situation, E/CN.5/267, Rev. 1 (United Nations Publications, Sales No. 1952.IV.11).

8/ J. S. Simmons, T. F. Whyne, G. W. Anderson and H. M. Horack, Global Epidemiology, a Geography of Disease and Sanitation, vols. I and III (Philadelphia, 1945 and 1954). M. C. Balfour, R. F. Evans, F. W. Notestein and I. B. Taeuber, Public Health and Demography in the Far East (New York, The Rockefeller Foundation, 1950).

TABLE 7. DISEASES OF MAJOR HEALTH IMPORTANCE (\*\*) AND WIDELY PREVALENT MASS DISEASES (\*) IN CERTAIN COUNTRIES OF ASIA AND THE FAR EAST.

Country	Enteric diseases	Malaria	Eye diseases especially trachoma	Tuberculosis	Diseases due to helminths	Skin diseases	Diseases of the respiratory system (except tuberculosis)	Venereal diseases
Turkey	*	**	**	**	*		*	
Syria	**	**	**	*	*	*		
Saudi Arabia	*	**	**	**		*	*	*
Yemen	**	**	*	**	*	*		*
Iraq	*	**	**	**	**	*		*
Iran	*	**	**	**	*	*		*
Afghanistan	**	**	*	**		*		
India and Pakistan	**	**	**	*	*	*	*	
Ceylon	**			*	**	*	**	
Burma	**	**	*	*	*	*		
Thailand	**	**	*	**		*		
Malaya	**	**	*		**	*	*	
Indonesia	**	**	*	*		*	*	*
Indo-China	**	**	*	*	**	*	*	
Taiwan	**	*	*	**		*		
Japan	**		*	**		*	*	
Philippines	**	**		**		*	*	*

In connexion with the use of hospital figures, it is well known that the data have only limited value in that they are considerably biased because of the types of patients that go to these institutions, communication facilities, popularity of the institutions, economic considerations involved, etc. All the same, they possess an advantage in that individuals who do attend the institutions are seen by qualified doctors whose diagnosis may be regarded as trustworthy within certain limits. It is therefore legitimate to examine the diseases for which medical assistance is most frequently sought at the various institutions. Here again, the study is somewhat limited, because in the national publications many diseases, for purposes of statistical classification, are grouped together, so that the importance of individual diseases is sometimes masked. However, as the brief discussion relating to individual countries following Table 7 will show, it is possible, with a fair degree of reliability, to assess what are the five or ten leading causes of sickness and death.

Table 7 shows that the major health problems in the majority of the countries of this area are enteric diseases, malaria, eye diseases and tuberculosis. In addition, diseases of the skin and diseases due to helminths are widely spread. Of all diseases, those common to practically all countries in Asia and the Far East are enteric diseases, thus emphasizing the need for improvement of environmental sanitation. Two other diseases of localized importance in several of these countries are hookworm and filariasis.

More specific information in respect of some of these countries is given below.

#### Iraq

The consolidation of the figures relating to patients treated in all health institutions in the country during 1951-1953 according to the 1938 International Classification of Causes of Death, provides the information given in Table 8. In this table, owing to the grouping of various diseases, a rather vague group "diseases of the nervous system and sense organs" appears with the highest class frequency. This heading assumes clearer meaning when it is noted that out of a total of 4,315,363 patients included in this group, as many as 3,456,006, or 80 per cent, were persons suffering from eye diseases alone. In this figure are included as many as 1,785,529 persons who sought treatment for trachoma alone, constituting 51 per cent of all cases of eye disease. The large majority of the remaining eye-disease patients were treated for conjunctivitis. In the light of these remarks, it will appear from this table that the major causes of sickness in the country are diseases of the digestive system, diseases of the eye, and malaria, followed by bronchitis, anaemia and diseases due to helminths. Broadly speaking, therefore, the mass diseases are those relating to poor environmental sanitation.

#### Iran

In December 1950 a demographic and health survey was undertaken by the staff of the Rockefeller Foundation, assisted by the Iran Ministry of Health and the University of Teheran Medical Faculty, in 173 villages in a rural area southwest of Teheran, comprising about 75,000 inhabitants in the districts of Char, Shahriar and Fasha-

TABLE 8. PATIENTS TREATED FOR VARIOUS GROUPS OF DISEASES IN HEALTH INSTITUTIONS IN IRAQ: 1951-53.

Diseases	Total patients treated	Percentage of total
Diseases of the nervous system and sense organs	4 315 363	20.9
of which: diseases of the eye	3 456 006	16.7
trachoma	1 785 529	8.6
conjunctivitis	1 279 211	6.2
diseases of the ear	746 786	3.6
Diseases of the digestive system	4 313 930	20.9
Epidemic, endemic and infectious diseases	2 289 562	11.1
of which: malaria	1 316 414	6.4
diseases due to helminths	484 267	2.3
Diseases of the skin	1 931 913	9.3
Diseases of the respiratory system	1 915 070	9.3
of which: bronchitis	1 027 317	5.0
External causes	1 763 204	8.5
Neoplasms, nutritional diseases, diseases of the blood	1 227 759	5.9
of which: anaemia	609 834	3.0
Diseases of the genito-urinary system	598 990	2.9
Others	2 314 797	11.2
Total	20 670 588	100.0

fouyeh.<sup>9/</sup> The survey included an enquiry into selected causes of morbidity, which revealed that at the time of the survey 10.4 per cent of the total population suffered from inflammation in one or both eyes, an ailment slightly more common among females than among males. Diarrhoea, defined as three or more loose bowel movements on the day of, or on the day preceding, the survey, was reported by 2.2 per cent of the entire population. Limited laboratory studies made during the survey revealed that of the 164 stool specimens collected at random from "healthy" village children and young adults, 22 per cent contained eggs of *Ascaris lumbricoides*. People were interrogated as to whether they had had malaria at one time or another during the five-year period prior to this survey; 21 per cent of the population answered in the affirmative. It was not possible to carry out laboratory or X-ray investigations on the prevalence of tuberculosis, but the enquiry revealed that roughly 1 per cent of the population was producing blood in the sputum at the time the survey was made. Although these figures do not indicate the relative importance of various diseases responsible for sickness in the community, nevertheless they do throw light on the heavy incidence of diseases of the eye, bowels and respiratory system.

#### Afghanistan

In October 1954 the participants in the Training Centre on Vital and Health Statistics in Kabul City, sponsored by the World Health Organization, undertook a sample survey of sickness, births and deaths in that city by house-to-house visits covering about 1,200 houses. Information in respect of the diseases incapacitating an individual for work at the time of the survey was obtained from the head of the household. The survey revealed that the leading cause of sickness in the city was tuberculosis, followed by rheumatism, malaria and pneumonia. A tabulation of deaths occurring among children under five years of age, in the year preceding the survey, revealed that the leading causes of death in order of importance were dysentery and diarrhoea, pneumonia, whooping cough, tuberculosis, typhoid fever, and measles. Among persons aged 15 years and over, the leading cause of death was found to be tuberculosis.

#### India

Available information in respect of patients treated in various hospitals and dispensaries relates to the period 1947-49; the relative position of certain diseases may have to some extent changed in later years because of mass campaigns carried out against certain diseases. However, the information given in Table 9 indicates in a broad manner what the major health problems of the country have been.

<sup>9/</sup> M. B. Mashayekhi and C. S. Hayes, Some Demographic and Health Characteristics of 173 Villages in a Rural Area of Iran (New York, the Rockefeller Foundation, 1952).

TABLE 9. CASES TREATED IN VARIOUS HOSPITALS AND DISPENSARIES, BY DISEASES, IN INDIA: 1947-1949.

Diseases	Number of cases
Infectious and parasitic diseases	31 887 844
of which: malaria	24 293 826
dysentery	3 840 454
Diseases of the nervous system and sense organs	25 705 541
of which: diseases of the eye	13 644 260
diseases of the ear	8 546 695
Diseases of the skin	19 308 167
Diseases of the digestive system	16 852 852
of which: diarrhoea	4 640 238
Diseases of the respiratory system	13 283 287
Injuries	7 601 607
Others	2 113 920
<b>Total</b>	<b>116 753 218</b>

The largest number of admissions was under the heading "infectious and parasitic diseases", with malaria responsible for 76 per cent of this group. The diseases of the eye, respiratory system, digestive system and skin, also were responsible for relatively large numbers of admissions. Information given in this table is incomplete in that diseases with fewer than 2,500,000 annual admissions have not been shown because the main purpose is to study only what the leading causes of sickness were. While it is generally known that malaria and diseases associated with the digestive system have in the past occupied a high position, a study of the above table shows that two other groups of diseases, namely of the eye and of the skin, were also relatively of great importance.

In the diseases of the eye, trachoma and conjunctivitis accounted for the large majority of cases. In the diseases of the skin, the important causes were scabies and ulcerative inflammations.

#### Ceylon

In December 1950, a sample survey was conducted by Cullumbine in Ceylon to determine the prevalence of disabling illness.<sup>10/</sup> It was based on house-to-house interviews of 17,946 households spread over the whole island. The prevalence and the prior duration of disabling illness was determined for the civilian non-institutional population aged 15 to 64 years. The Survey revealed that on an average 5.32 per cent of the sample population was unable to work because of illness or injury.

Table 10 summarizes the data given by Cullumbine and indicates that almost one-third of the sick population was disabled because of infective and parasitic diseases.

<sup>10/</sup> H. Cullumbine. "A Survey of Disabling Illness in Ceylon", Bulletin of the World Health Organization, vol. 7 (1952), pp. 405 to 429.



TABLE 10. PERCENTAGE DISTRIBUTION OF DISABLED PERSONS AGED 18 TO 64 YEARS, BY GROUPS OF DISEASES, FOR CEYLON: DECEMBER 1950.

Diseases	Percentage of total disabled
Infective and parasitic diseases	31.4
Rheumatic diseases	14.1
Diseases of the nervous system	8.8
Diseases of the respiratory system	7.3
Diseases of the skin	6.2
Diseases of the digestive system	6.0
Other diseases	26.2
Total	100.0

Some further idea of the prevalence of the major diseases or illnesses for which treatment is sought is provided by data on patients attending various dispensaries in the island. Table 11 shows that during the period 1951-53, diseases of the respiratory system were responsible for about 13.3 million visits to dispensaries of which 8.6 million were cases suffering from influenza. About 5.5 million cases of diseases of the digestive system were treated; while visits for diseases due to helminths were of the order of 3.8 million. Next in importance were anaemias, with 1.9 million cases.

TABLE 11. CASES TREATED IN DISPENSARIES FOR SOME OF THE MORE FREQUENTLY OCCURRING DISEASES, FOR CEYLON: 1951-53.

Diseases	Cases treated
Diseases of the respiratory system	13 288 470
of which: influenza	8 598 012
Diseases of the digestive system including dysentery, gastritis, etc.	5 526 199
Diseases due to helminths	3 805 718
Anaemias, excluding avitaminosis and other deficiency states	1 908 462

It would thus seem that the major causes of sickness in the island were respiratory diseases, followed by the ailments of the digestive system.

#### Malaya

Table 12 shows the number of out-patients treated for various diseases at the dispensaries in Malaya during the period of 1951-53. Even though the information presented in this table lacks clarity because of the grouping together of various diseases, it is clear that the diseases of the respiratory system, digestive system and diseases of the skin constituted problems of major importance in the country. Diseases of the eye, malaria and diseases due to helminths were also widely prevalent.

TABLE 12. NUMBER OF OUT-PATIENTS TREATED AT DISPENSARIES IN MALAYA: 1951-53.

Diseases	Total treated
Diseases of the respiratory system	1 198 788
of which: bronchitis	680 753
influenza	271 724
Infections and parasitic diseases	819 319
of which: malaria	266 840
diseases due to helminths	266 639
Diseases of the skin, cellular tissue, bones, and organs of movement	759 210
Diseases of the digestive system	621 922
Diseases of the nervous system and sense organs	491 929
of which: diseases of the eye	218 783
Accidents, poisonings and violence	401 609
Diseases of allergic endocrine system, metabolic and nutritional diseases and diseases of the blood and blood-forming organs	343 237
of which: anaemias	210 843
Other diseases	294 225
Total	4 930 239

#### Viet-Nam

Table 13, relating to patients treated in hospitals in Viet-Nam in 1952, provides a rough indication of the major disease-groups responsible for sickness. Of a total of 778,160 cases of infectious and parasitic diseases, 362,318 were due to malaria. Another 234,216 were due to helminthic diseases. In the cases shown under "diseases of the respiratory system", the majority related to acute bronchitis. Among the diseases of the sense organs, the majority - 89.7 per cent of them - were diseases of the eye. Skin diseases have also been of considerable importance.

TABLE 13. CASES TREATED FOR VARIOUS DISEASES IN HOSPITALS IN VIET-NAM: 1952.

Diseases	Number of cases
Infectious and parasitic diseases	778 160
of which: malaria	362 318
diseases due to helminths	234 216
Diseases of the respiratory system	423 258
of which: bronchitis	344 314
Diseases of the nervous system and sense organs	382 475
of which: diseases of the eye	337 966
Nutritional diseases	353 821
of which: anaemia	192 165
Diseases of the skin	298 109
Diseases of the digestive system	284 625
Others	504 004
Total	3 024 452

### Indonesia

According to Balfour *et al*: "Malaria is considered the principal cause of rural deaths. Intestinal diseases, including the typhoids and dysentery, are presumed to play an important role in infant and general mortality. Yaws is widespread, millions of cases having been treated in the past thirty years .... Hookworm infection has always been widespread, but hookworm disease is reputedly uncommon. Up to 1936, 10,000 cases of leprosy were known. Tuberculosis is assumed to be a major health problem but there were few or no survey records".<sup>11/</sup>

While statistical information on a national basis is not available, a survey by Gremée of registered deaths by causes in 1940 showed that pneumonia occupied the first place in causes of mortality, being responsible for about 11.9 per cent of all deaths.<sup>12/</sup> This was followed by tuberculosis (10.1 per cent), violence and accidents (7 per cent) and malaria (6.7 per cent). Among the most frequently occurring diseases were those of the skin, cellular tissues, bones and locomotive organs (11.3 per cent), followed by malaria (9.2 per cent). Eye diseases were responsible for 5.2 per cent and tuberculosis of the lungs for 3.3 per cent of deaths.

According to Simmons *et al*, the chief diseases in Indonesia are malaria, dysentery, venereal diseases, scrub typhus, yaws and infections of the skin.<sup>13/</sup>

### Taiwan

Information given in Table 14 relates to out-patients seen at provincial hospitals in 1952.

Among the infectious and parasitic diseases, tuberculosis occupies a prominent place. Diseases of the eye, diseases of the skin and enteric diseases are also important.

### Japan

In Japan a sample survey is carried out each year to study the characteristics of patients attending hospitals and clinics of the country. The findings of the March 1952 sample survey are summarized in Table 15.

This table shows that in the diseases of the digestive system (which occupy the first place), the diseases of the teeth and teeth-supporting structure figure most prominently. Tuberculosis also occupies a prominent place.

<sup>11/</sup> M. C. Balfour, R. F. Evans, F. W. Notestein and I. B. Taeuber, *op. cit.*

<sup>12/</sup> Statistics given in a personal communication to the author.

<sup>13/</sup> J. S. Simmons, T. F. Whayne, G. W. Anderson and H. M. Horack, *op. cit.*

TABLE 14. NUMBERS OF OUT-PATIENTS TREATED AT PROVINCIAL HOSPITALS, IN TAIWAN: 1952.

Diseases	Cases treated
Infectious and parasitic diseases	74 085
of which: tuberculosis (all forms)	39 470
Diseases of the digestive system	73 473
of which: diseases of the buccal cavity and annexa, and of the pharynx and tonsils	35 263
diseases of the intestines	19 762
diseases of the stomach and duodenum	14 827
Diseases of the nervous system and sense organs	72 541
of which: diseases of the eye	40 730
diseases of the ear	17 383
Diseases of the respiratory system	53 639
of which: bronchitis	21 454
diseases of the nasal fossae and annexa	13 526
Diseases of the skin and cellular tissue	28 682
Diseases of the urinary and genital systems	26 082
of which: diseases of the female genital organs	20 703
Violence or accidents	11 755
Others	59 843
<b>Total</b>	<b>400 100</b>

TABLE 15. NUMBER OF PATIENTS PER 100,000 POPULATION ATTENDING HOSPITALS AND CLINICS FOR VARIOUS TREATMENTS IN JAPAN: 5 MARCH 1952.

Diseases	Number of patients per 100,000 population
Diseases of the digestive system	545
of which: diseases of teeth and teeth-supporting structure	335
Infectious and parasitic diseases	444
of which: tuberculosis	284
Diseases of the respiratory system	364
Diseases of the nervous system and sense organs	305
of which: diseases of the eye	128
diseases of the ear	110
Diseases of the skin and cellular tissue	131
Accidents, poisoning and violence	118
Diseases of the genito-urinary system	85
Other diseases	403
<b>Total</b>	<b>2 395</b>

## GROWTH OF PUBLIC HEALTH PROGRAMMES

### National developments

During the years following the Second World War, a number of Governments of countries in Asia and the Far East have not only expanded their public health services but in many cases have reformed the structure of such services either in part or wholly. As stated in the United Nations International Survey of Programmes of Social Development, "Such reforms reflect the fact that Governments are nearly everywhere assuming greater responsibilities for the protection of the health of their populations .... Not only have health services been expanded to ensure adequate health for larger segments of the population, but the form in which these services are rendered has also undergone important change. In a growing number of instances, health services have been provided directly by the Governments under schemes whereby the curative and preventive services are integrated and rendered together .... Thus, the 'co-ordinated approach' to health matters has been gaining favour and has enabled professional and auxiliary workers in such fields as environmental sanitation, health administration, nursing, health education and maternal and child health to combine their efforts in substantial contributions to the complete health of the population."<sup>14/</sup> Thus, India has set an example in the amalgamation of services for curative and preventive medicine. The Health Survey and Development Committee recommended that the medical relief should be amalgamated in the public health organizations under a single head, and this was done, with the creation of a single post of Director-General of Health Services.<sup>15/</sup> Most of the States in India followed suit, and unification of control was obtained. In Indonesia the National Health Planning Commission has recently been established to initiate a nationwide planning of health-care services throughout the country, from experience gained in a demonstration of integrated health services in one of the Regencies (Bandung). In Burma, health services, which were previously vested in three separate agencies, have since 1953 been combined under one Directorate-General of Health Services. The Government of Burma has also recently nationalized all the hospitals, and the hospital services will be integrated into the total health service of the country.

Generally, health authorities are becoming aware that many campaigns for the eradication of disease will have only temporary results if they are not followed by the establishment of permanent health services in the rural areas to deal with the day-to-day work in the control and prevention of disease and the protection of health.

In addition to such unified or co-ordinated attack on health problems, certain other develop-

<sup>14/</sup> United Nations, International Survey of Programmes of Social Development, ST/SOA/21 (United Nations Publication, Sales No. 1955.IV.8), p. 11.

<sup>15/</sup> India, Report of the Health Survey and Development Committee (New Delhi, 1946).

ments in health work that need special mention are the establishment of rural health centres, community development projects and mobile field units.

The idea of rural health units was mooted in the days of the League of Nations, and the post-war years have seen a considerable expansion of this work. In Ceylon, for instance, a start was made as early as 1926. The units have recently been increased in number and the island now has 93 health units, each under a medical officer of health covering an average population of 40,000 to 60,000. All preventive health work is based on these units. Each unit area has about eight subsidiary maternal and child health centres with public health nurses and midwives for each 8,000 population group. In Thailand the work was started by the establishment of the Chieng-Mai health centre, which served as a demonstration and training area. Since then a number of rural health centres have been set up as part of the experimental approach to the problem of finding the type of rural health services most suited to local conditions and needs. In Japan, the first health centre was established in 1935 and plans were laid for the next ten years to construct 570 centres and 1,140 branches. But the war devastated practically all of these facilities and the programme was at a standstill. After the war, the centres were reorganized and reconstructed, and in March 1954 as many as 772 centres with a staff of 40,485 (including 5,066 physicians and 7,806 nurses) were working as the pioneer organization for public health programmes.

India initiated, with the help of the Ford Foundation in October 1952, a community development programme, which is a multi-purpose programme for the simultaneous improvement of economic conditions, agriculture, irrigation, animal husbandry, industry, communications, social welfare, education and public health. The health services include curative, preventive and domiciliary services through adequately staffed health centres. This programme is expected to effect considerable improvements in the health of the people, especially in rural areas. The work has grown rapidly under national leadership. By March 1955, this programme covered about 100,000 villages with approximately 70 million people. By 1961 it is planned to cover every village in India. Similar developments are taking place in other countries in this area, notably Pakistan and Indonesia.

Where large and sparsely populated areas have to be covered, mobile medical field units have been organized for local health service. Although originally intended for the control of communicable diseases, their use is also being extended to provide a type of spearhead health service.

The countries in this area have also recognized the need for more and better qualified physicians and auxiliary personnel, for the training of whom new medical schools are being established; those already existing have been developed to raise their output and special measures are being taken to ensure that physicians are not concentrated in urban areas alone.

TABLE 16. NATIONAL PUBLIC HEALTH BUDGETS IN VARIOUS COUNTRIES: 1938/39 TO 1955/56

Country	National currency	Amount in thousands in financial year								
		1938/39	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55	1955/56
Afghanistan	Afghanis	-	-	-	-	-	13 767	25 742	-	-
Burma	Kyats	-	-	-	-	-	19 959	30 883	-	-
Ceylon	Rupees	13 600	58 800	64 200	69 500	84 800	89 400	92 300	94 300	104 600
India										
Central Government <sup>a</sup>	Rupees	6 000 <sup>b</sup>	-	33 200	52 300	63 900	47 300	44 100	72 800	128 300
State Governments	Rupees	-	-	-	-	292 200	304 200	319 200	367 500	462 900
Indonesia <sup>c</sup>	Rupiahs	-	-	-	-	-	297 118	328 663	-	-
Iran	Rials	34 000	216 000	251 000	-	-	-	438 000	519 000	-
Iraq	Iraqi Dinars	360	1 720	1 490	2 010	2 530	2 890	3 080	4 200	-
Japan	Yen	187 000 24	773 000 28	182 000 35	314 000 46	018 000 72	128 000 73	176 000 83	816 000	-
Malaya <sup>c</sup> (Federation of)	Malayan dollars	-	22 700	25 900	32 400	44 100	48 600	54 300	55 000	-
Pakistan										
Central Government <sup>a</sup>	Rupees	-	-	10 600	11 100	17 000	22 000	17 800	39 100	43 600
State Governments	Rupees	-	27 500	27 000	33 500	37 700	46 900	57 900	-	-
Thailand <sup>c,d</sup>	Bahts	2 800 <sup>e</sup>	36 100	75 800	109 400	144 300	-	207 200	146 200	-

- Information not available.

a Education and health expenditure.

b For Undivided India.

c For calendar years.

d Public health and social welfare expenditure.

e Financial year 1939/40.

To quote from the World Health Organization, "Health activities in South-East Asia are expanding rapidly, and an attempt is being made to integrate all projects into national programmes and services. Most important is a gradual change in attitude which governments are experiencing, a trend towards emphasis on basic, preventive work, such as sanitary improvements and health education, rather than on building hospitals".<sup>16/</sup>

A rough idea of the growth of public health work is obtained from the increase shown from year to year in the national public health budgets of various Governments, as shown in Table 16.

The figures expressed in different national currencies are, of course, not comparable from one country to another. Nor do they show the total expenditure on public health, because the funds allocated by municipalities, or such other urban or rural units as are self-governing in matters of health, are not included. For instance, in India during 1948/49 about 17 per cent of the total income of municipalities was expended on public health and about 10 per cent of the total income of rural district Boards. These amounts are not shown in the table. Nevertheless, the table may be helpful for studying existing trends. This table shows that the funds allocated for health work were on the increase in all countries and were relatively much

<sup>16/</sup> World Health Organization, *The Work of WHO, 1954, Annual Report of the Director-General* (Geneva, 1955).

higher than the pre-war figures. It may be noted that these funds were being further augmented by assistance flowing into these countries from United Nations Technical Assistance Funds, from regular budgets of WHO and the United Nations International Children's Emergency Fund (UNICEF), as well as bilateral assistance, such as that provided by Colombo Powers, the United States International Co-operation Administration, etc.

Inasmuch as the value of national currencies has depreciated in the post-war years, a better study of the trends is provided by the following Table 17, in which an index of annual health expenditure has been worked out from the base year 1938/39 by adjusting the annual national figures in accordance with the rise in the index of wholesale prices relating to the same base year, as given in the United Nations *Statistical Yearbook, 1955*. No claim can be made that by this method an entirely satisfactory adjustment has been made; it is merely a trial aimed at a better understanding of the data. The figures in this table should, therefore, be regarded as providing only broad indications. Comparisons for all countries listed in Table 16 could not be made because of the lack of necessary data for making proper adjustments.

Even after the approximate adjustment for depreciated value of money in each country, the figures show an increase which is relatively greater than that in the population of these countries.

TABLE 17. RECENT CHANGES IN THE INDEX OF NATIONAL EXPENDITURE ON PUBLIC HEALTH (BASE 1938/39).

Country	1938/39	1948/49	1949/50	1950/51	1951/52	1952/53	1953/54	1954/55
Ceylon	100	173	179	186	229	237	247	252
India and Pakistan <sup>a</sup>	100	-	188	259	301	295	258	476
Iran	100	107	133	-	-	-	193	194
Iraq	100	84	88	115	132	146	188	267
Japan	100	147	102	108	101	154	157	181

- Information not available.

a Expenditure on education and health by Central Government only.

## Role of WHO in public health programmes

At its very inception, i.e., while still functioning as an Interim Commission in 1946, the World Health Organization gave priority to six major health programmes which especially affected the peoples of Asia and the Far East. These were: control of malaria, improvement of maternal and child health, control of tuberculosis, control of venereal diseases, improvement of nutrition and eradication of cholera. The earlier years of the Organization's work were thus mainly devoted to these problems, but since then there has been a considerable expansion and widening of activity. Although these six major problems still continue to receive an increasing degree of attention, more attention is now being paid to strengthening of national health services and improving environmental sanitation in this part of the world. The activities of the Organization have to a large extent been decentralized in the sense that, after the establishment of WHO Regional Offices, the major health problems of individual countries can be ascertained and health programmes adjusted or developed according to the resources available from within each country and from outside. The countries of Asia and the Far East are being served by three WHO Regional Offices, viz., at Manila for the Western Pacific Region, at New Delhi for countries of South-East Asia and at Alexandria for the countries in the Middle East.

In recent years the assistance provided by WHO to Governments in Asia and the Far East has fallen under six main heads: control of communicable diseases; maternal and child health combined with nursing; strengthening of health directorates; medical education; training of personnel in all categories; and, last but not least, environmental sanitation.

In the field of communicable disease, activities continue against malaria, tuberculosis, and the treponemal diseases. Malaria control organizations have been set up in all countries, and effective control or possible eradication is the goal to be achieved in the next few years. With regard to tuberculosis, in addition to the programmes of BCG vaccination, at least one demonstration and training centre has been set up in each country. In maternal and child health, assistance has been given by both UNICEF and WHO in the extension of existing services through demonstration and training projects. The strengthening of health directorates is, of course, essential if the public health projects planned are to be satisfactorily executed. A beginning has been made by providing a number of Governments with the help of experts to train national counterparts.

Auxiliary health personnel are badly needed in countries of Asia and the Far East for carrying out effective work in public health. Governments are becoming increasingly aware of this need and it is to be hoped that intensified local training and the granting of more fellowships will soon improve the situation. In some countries where assistance is most needed, unsettled conditions have led to

delays in the establishment and progress of training programmes.

Environmental sanitation is, of course, vital in the region. Surveys have been carried out in parts of India, Burma and Ceylon. A pilot project has begun in Ceylon, with UNICEF supplies, and projects are soon to begin in Burma and India. It is hoped that the result of these projects will show how WHO can best help the Governments of the region.

In the development of many of WHO-sponsored national health activities, the financial resources of UNICEF, the funds of the United Nations Technical Assistance Programme, together with assistance from the United States International Co-operation Administration and the Colombo Powers have provided increasing impetus. In all these cases the Organization began by demonstrating or developing suitable techniques, and these demonstrations have had considerable effect in assisting Governments to develop and expand their programmes. Thus, while in 1949 in South-East Asia only 11 field projects costing \$198,000 and employing 25 field staff were handled, in 1952 the number of projects had increased to 74 costing \$4,000,000 and employing 227 field staff in addition to providing 144 fellowship awards.

It is no doubt true that many of the programmes launched in different countries, with or without the assistance of WHO, have resulted in the additional saving of human lives. But not all such programmes can be presumed to merely add to the population numbers. The widespread use of antibiotics and of other recently developed agents and public health practices, which have proved successful in saving human life, have also contributed considerably to reducing sickness, thus raising the health level of the populations affected by various non-killing diseases. An outstanding example has been the mass treatment of venereal infections, and non-venereal treponematoses with penicillin, etc. which have proved efficacious and economically feasible.

The mass treatment of yaws patients, to the extent of several millions in recent years (two millions treated in Indonesia alone up to 1954), has not necessarily added to the population by saving lives but has provided the country with people fitter than before to contribute to national development.

If the estimated 150 million persons attacked by malaria each year in these countries of Asia and the Far East are each saved an average of a week's sickness, simple arithmetic shows that the number of person-years of fitness contributed to productive work is of the order of at least two million years, when allowance is made for the fact that some of the persons freed from this disease are children and old people.

## SUMMARY

Within the limitations imposed by the unreliability, or in some cases by the complete absence, of statistical information bearing on the growth of population and health status of countries in Asia and

the Far East, an attempt has been made in this paper to study recent trends in the increase in population and in public health work. The study relates to the period following the First World War with special consideration given to the period after the Second World War, during which countries in this area have witnessed an unprecedented flow of both economic and technical aid from outside sources, intended to raise the standard of living of the masses. It is noted that in the last decade or so, while the growth of population in certain insular countries such as Taiwan, Philippines and Ceylon, has been rather rapid, the increase in population in

many countries has not displayed any extraordinary features. In these increases, the decline of the death rate has played an important role.

In answer to the charges that have been levelled in some quarters against public health programmes because they save an increasing number of lives and thus add to the pressure of population, it has been shown that the effect of accelerating major health programmes has largely been in the direction of reducing the level of sickness, which in turn promises to raise the health level and productive capacity of the peoples inhabiting Asia and the Far East.

## DEMOGRAPHIC ASPECTS OF MANPOWER IN THE FAR EAST

By George W. Barclay

Paper prepared for the Seminar on Population  
in Asia and the Far East

In the forming of national policies, studies of the size and composition of a country's manpower are among the foremost contributions that demography has to offer. Economic programmes include, at least implicitly, some allocations of manpower in various pursuits, and these plans require some inventory of the country's manpower resources, present and prospective. Some of the considerations entailed in reaching a statistical measurement of manpower, the kinds of information that exist about manpower resources in countries in the Far East, some characteristics of the working population, and some of the topics of study in this field will be surveyed in this paper.

### Sources of data

What are the statistical materials by which manpower resources can be measured? In demography, the term "manpower" refers to the number of actual or potential workers in a population. It is measured in units of persons, not units of work. Because there are continual changes in people's working activities, it is necessary to count them all at some particular time, as nearly as possible at the same moment or short period. For this reason census data are most commonly used, since this is the sort of information that a census provides (though other sources are often useful for limited purposes).

The same kind of information can be secured by a sample survey if in design it is similar to a census. Sample surveys have some advantages over a census, for they are quicker, cheaper, and can be conducted with closer supervision and more frequency. A sample drawn in connexion with a census may yield results that are indistinguishable from those of a census.

A census aids the analysis of manpower chiefly by classifying people according to economic activity. It is essential that everyone in the population should be brought into the classification, and hence, another reason why census-type data are so useful is their complete coverage.<sup>1/</sup> Actually, classification of economic activity in most census statistics has two purposes: to determine whether a person

works (is "economically active") or not, and to show what sort of work (or non-working activity) he does. The information may be secured with only a few questions on the census schedule — as few as one or two, depending on what definition of economic activity is adopted. Thus it may be a very easy matter to record this valuable information (though the preparation of standards and instruction of enumerators may become extremely complicated); the greatest task, and expense, is in making it available in cross-tabulation with other characteristics of the enumerated persons.<sup>2/</sup>

### Definitions of economic activity

It is not easy, however, to devise a scheme for deciding which people are "economically active" and which are not. This implies a standard for judging what activities constitute "productive work" and some consistent criteria to judge what degree of performance is sufficient to class a person as "active". It is probably true that most people fall clearly into one category or the other; but in every country there are many who do not fit easily into either. Those working in family enterprises, especially if their efforts are part-time and unpaid, are among the most difficult to classify. The application of the scheme to every member of a population involves endless problems of detail, which have to be solved by rules equally detailed. No set of rules is really satisfactory for all cases. Through long experience in census-taking, however, certain definitions have been found to give good results.<sup>3/</sup>

There have been two main approaches to the matter of standards defining what is and what is not economic activity. The first is to ask each person what is his usual occupation, or "gainful work", without inquiring exactly when the work was done. According to this approach, the economically active are simply those who report some usual

<sup>2/</sup> Very careful enumerations are often of very limited usefulness because this is not recognized. Much of the lack of data in the Far East in the past has been primarily a matter of inadequate cross-tabulation of the data that exist.

<sup>3/</sup> In addition to the census standards of economic activity developed by individual countries, the subject has come under review by international agencies. See, for example, the United Nations, Application of International Standards to Census Data on the Economically Active Population, ST/SOA/Series A, Population Studies No. 9 (United Nations Publication, Sales No. 1951.XIII.2).

<sup>1/</sup> If large categories of people are omitted from the scope of a census, this will unavoidably lead to some distortion of its data on manpower. Exclusion of substantial groups like military forces, persons in labour camps, or plantation workers, may reduce or nullify the value of certain conclusions from these data.

occupation in the census (often referred to as the "gainfully occupied"). As a precaution against careless or inconsistent reporting, specific rules may apply to borderline cases, especially defining typical cases to be classed as "not occupied" (for example, persons "living on income", inmates of special institutions, etc.). With this same information, each economically active person can be classified according to the nature of his occupation.

The other approach, more complex to administer, defines the economically active population as the "labour force", which represents the number of people actually at work (or seeking work) during some particular short period. Like the standard of the "gainfully occupied", the measurement of the labour force requires rules of classification to determine who should be considered economically active and who should not, but the stated time period supplies a more definite criterion. More than one question is required on the census schedule, the actual number depending on the nature of the subsidiary information desired.<sup>4/</sup> In addition, the numbers of people not actively working at the stated date, but "seeking work", are sometimes tabulated separately as the "unemployed" (but still treated as a sub-class of the economically active, because they are only temporarily out of work).

Thus, although the information is collected at approximately the same time for everyone in the population, it refers to work performed at some other time. For the "labour force" the date of employment must be exactly specified, but for the "gainfully occupied" the basis of classification is the usual or customary role of each person during some indefinite period.<sup>5/</sup>

Both approaches are found in the Far East, though the standard of the "labour force" has been used only recently. It would be inaccurate to say definitely that one or the other is "better". Where an individual's occupation is a fairly steady status and changes are not frequent, the real situation may be more accurately reflected by the notion of the "gainfully occupied". With the more definite standard of the "labour force", there is some doubt about the reliability of replies; in particular, "unemployment" as defined above is not a very distinct category in the Far East. Obviously, a census question about customary occupation is easier to administer, requiring less supervision.

Where wage labour is common, where changes of occupation are frequent and the periods of employment are fairly definite, the "labour force" is a more sensitive measure of fluctuations in the volume of employment, excluding people who are temporarily

not working; the numbers of "gainfully occupied" provide a poor gauge of the volume of employment during times of rapid change, because people report an occupation once held when they no longer engage in it.

The two approaches reflect different conceptions of the nature of economic activity. They can both measure the same situation somewhat differently, though this depends also on other factors besides the approach to definition (on the quality of the administrative organization for a census, for example). All statistics of the economically active population therefore contain many arbitrary elements, and it is always prudent to pay close attention to the design and preparation that went into collecting the data. However, it is sometimes overlooked in discussing their relative merits that these two approaches often give nearly the same results in the way they classify the economically active.<sup>6/</sup>

#### Factors determining labour supply

Indeed, the portion of the population that is economically active is very similar in most countries. Full-time work is concentrated in early and middle adulthood. The very young and very old do not follow regular occupations (except to a very minor extent), but are dependent on others. Hence, the number of people between these two extremes is the group from which the supply of labour is drawn.

By common convention in demography, people from 15 to 64 years of age are treated as the group supplying the bulk of the economically active, and are called the "population of working ages". (This age interval actually includes most — but not all — people who report an occupation). Using this convention it is possible to make international comparisons of manpower resources, including countries which lack statistics on economic activities, or whose statistics are not comparable to those of other countries. The size of this group in relation to the rest of the population gives an approximate idea of the conditions which age structure imposes on the livelihood of a population. (See the first column of percentage in Table 1.)

In the Far East, where high birth rates have brought increasing numbers of younger people annually to each country, the age structure is weighted with a large proportion of children too young to work (as well as with some people who are too old). As shown by Table 1, in those countries with census data by age, the people aged 15-64 range from 53 to 60 per cent of the total population (not counting Hong Kong, which had a higher per-

4/ Ibid. Pages 14 to 17.

5/ Though this is the clearest distinction between the two approaches, an actual standard may be intermediate between the two. United Nations, Application of International Standards, op. cit. page 5.

6/ Though the variations in census practice usually centre around alternative ways of counting and classifying the economically active population, it should be men-

tioned that "economic activity" is not always used as the basis of the classification. The 1951 census of India, for example, follows a different scheme, dividing the entire population into "self-supporting persons", "earning dependents", and "non-earning dependents". Though it is a very interesting experiment, this scheme does not produce results that are comparable to data on the economically active population in other countries.



TABLE 1. POPULATION OF "WORKING AGES" (15-64 YEARS) IN SELECTED COUNTRIES: CENSUS DATA

Country and year	Population 15-64 years as percentage of total population	Persons of "Dependent ages" per 100 persons of "working ages"	Distribution of population 15-64 years of age	
			Per cent 39 years and below	Per cent 40 years and above
Philippines, 1948	53	90	75	25
Korea, 1944	53	89	66	34
Taiwan, 1940 <sup>a/</sup>	53	88	70	30
Thailand, 1947	55	81	72	28
Malaya, 1947 <sup>b/</sup>	58	72	67	33
India, 1951	58	71	67	33
Japan, 1950	60	68	66	34
Ceylon, 1946	59	69	71	29
Hong Kong, 1931	73	37	73	27
United States, 1950	65	55	58	42
Sweden, 1950	66	51	53	47

a/ Taiwanese only.

b/ Federation of Malaya and Singapore.

centage by virtue of its steady immigration).<sup>7/</sup> By contrast, in countries of the West a much greater majority of the population is found in these ages of most productive work, and the age structure places a smaller burden of dependency on those who are working. This is reiterated (somewhat differently) in the next column of Table 1 (persons of "dependent ages" per 100 persons of "working ages"), calculated from the same data. In the United States, for example, where in 1950 there were 55 persons in the "dependent ages" per 100 aged 15-64, it is evident that age structure is more favourable to the efficient use of people in productive activities.

Rather crudely, these illustrations show the effect of the simple factor of age structure on the degree of dependency and its variation. The burden is heavy, and the variation within the region (at the dates represented in Table 1), is rather small. However, though the size of these age groups set a maximum limit to the number of workers available at any moment, other factors help to determine the number who are actually working. To appreciate the actual resources of a country's potential manpower, it is necessary to examine some other aspects of its composition which affect the utilization of the total.<sup>8/</sup>

#### Differences by sex

In Asia, as in most of the world, earning a livelihood is considered to be primarily a male respon-

sibility. This division of labour gives predominantly to men the duties and the title of providing support for their families. It does not mean that men are the only ones who work; however, they do most of the work classed as "economic activity" in any census, especially when such activity is carried on outside the household.

The work of women is normally conducted on a different basis. It is also regarded differently, and is less often reported as gainful employment in census or survey returns. Female wage labour is not very common in most countries of the Far East, especially in the rural sections. In much of their adulthood, women are engaged in housekeeping duties and the nurture of children, which require a large output of effort but do not enter the occupational statistics. In these circumstances, census statistics therefore give a poor indication of the actual work done by women; they are very difficult to interpret on this point, and may be misleading if taken at face value.

Table 2 shows some returns of the economically active in several Far Eastern countries, and is sufficient to indicate that such data are inadequate to measure the activity of men and women in the same terms. The reporting for women, moreover, is variable from country to country, and from place to place within a country. For this reason statistics of the economically active population are usually studies for males.

<sup>7/</sup> Of the population in the "dependent ages", persons aged 65 and over are a small part of the total population — between 3 and 5 per cent in the Far Eastern countries shown above. They are exceeded many times by the younger group, under age 15, which is responsible for the main burden of dependency in this region.

<sup>8/</sup> For a more thorough discussion of the effects of age structure and their relations to other aspects of the composition of manpower, see J. D. Durand, "Population Structure as a factor in manpower and dependency problems of under-developed countries", *Population Bulletin of the United Nations*, No. 3, ST/SOA/Series N/3 (United Nations Publication, Sales No. 1953.XIII.8).

TABLE 2. ECONOMICALLY ACTIVE POPULATION AS PERCENTAGE OF TOTAL POPULATION, BY SEX (ALL AGES) IN SELECTED COUNTRIES: CENSUS DATA

Country and year	Males	Females
Philippines, 1948 <sup>a/</sup>	46	14 <sup>b/</sup>
Indonesia, 1930	51	18
Taiwan, 1940	54	22
Japan, 1950 <sup>a/</sup>	55	34
Malaya, 1947	57	18
Ceylon, 1946	58	18

a/ Using a standard of "labour force", or some modification, to classify the economically active population. In the other countries, "customary occupation" was the standard.

b/ 1,638,624 "housewives", added by the census authorities to the totals of economically active women, have been removed.

#### Employment of manpower by age

One of the clearest patterns shown by the statistics for males is the extent of some pursuit of livelihood by age. This is shown by the percentages economically active among males of different age groups in Table 3. Through the range of ages between about 25 and 55 years, such statistics yield nearly the same percentages for almost all countries, notwithstanding the wide variations that exist in economic life and in census practice. The principal differences in the proportion of men that work for a living are found, first, among the young who are commencing work, and among the old in their pattern of retirement. Compared to Canada, the proportion of males at ages 15 to 24 with gainful occupations is larger in most Far Eastern countries; the difference becomes very striking when the groups aged 10-14 are compared. In the Far East, the pressure of necessity forces young men to go to work far more often at an early age, while

in industrial regions, the entry into an occupation has gradually been delayed, as it has in Japan, the most industrialized country of the Far East. (Undoubtedly some of the differences in Table 3 are due to variations in census practice, but they are too consistent to be explained entirely by that.)

At older ages, it is usually the case that people retire from work earlier in industrialized countries. This is due, again, partly to the different statistical definitions of economic activity. Largely, however, it is because of the nature of the work, which permits older people to linger on in agriculture and related occupations after their period of maximum productivity is over. In small-scale farming, for example, there are many tasks that can be performed adequately, if not efficiently, by older workers, delaying their full retirement.<sup>9/</sup>

The age pattern of participation in economic activity should be viewed in relation to the age structure of these populations. It is the countries at the greatest disadvantage in age structure that develop the pattern of early employment shown in Table 3. In other words, it is one way of offsetting part of the burden of dependency which they carry. Because large proportions of people are in the young age groups, a fairly small increase of the percentage employed between, say, ages 10 and 14 produces a large increase in the actual number employed. (By the same argument, variation in percentages economically active at higher ages has rather little effect upon the total number of people working.)

The influence of the age composition within the "working ages" is suggested by the last two columns of Table 1, contrasting these countries again with the United States and Sweden: the economically active population would be young in the Far East even if boys were not put to work at

<sup>9/</sup> For reasons already mentioned, the pattern is variable among the Far Eastern countries shown here. It should be added that the pattern also varies among Western countries, and it is not always safe to attach significance to these differences.

TABLE 3. PER CENT ECONOMICALLY ACTIVE AMONG MALES IN EACH AGE GROUP IN SELECTED COUNTRIES: CENSUS DATA

Age (in years)	Philippines 1948	Taiwan 1940	Ceylon 1946	Japan 1950	Canada 1951
10-14	27	23	14	5 <sup>c/</sup>	1
15-19	69	87	59	53	58
20-24	90	97	83	90	92
25-34	97	98	97	96	96
35-44	97	97	99	97	97
45-54	96	94	94 <sup>b/</sup>	97	94
55-64	88	83 <sup>a/</sup>	88	92	86
65 and over	53	58 <sup>a/</sup>	71 <sup>b/</sup>	65	39

a/ Age groups are 55-59, 60 and over.

b/ Age groups are 45-59, 60-69, 70 and over.

c/ Age groups are 10-13, 14-19, 20-24, 25-29, 30-39, 40-49, 50-59, and over.

so early an age, for a large portion of the group aged 15-64 is concentrated in the lower half of the interval.

By their large reservoirs of young workers and their practices of early employment, these countries achieve a balance between the numbers of economically active and dependants that compares favourably with many countries of the West.<sup>10/</sup> But this numerical balance is achieved by mass employment of people without special skills, and inflicts its own cost in terms of low output per person. Successive groups of people entering the ages of economic activity are increasing in number each year, in a situation characterized by shortage of jobs rather than shortage of workers.

#### Education

It is obvious why there is a difference between the early employment of males in the Far East and the later pattern in many Western countries. Some of the years corresponding to those spent in early work by young men in Asia are spent in training in industrialized countries. Schooling is foremost among the activities keeping boys, and to a lesser extent girls, out of gainful work in the West, partly because it has become a customary expectation, but also because it is considered essential to the maintenance of an economy based on high levels of specialized skill.

In the Far East, whereas most countries probably could well afford, on a national scale, to withdraw a large part of their youth from work which is low in productivity, they can ill afford to provide similar training to age groups so large in proportion to the entire populations. With so many children, the cost of extending general education for even one year is very high, and employment has appeared cheaper to provide than schooling. In the longer view, however, it is gradually being considered as a matter of balancing the cost of providing such training against the cost of not providing it, and the emphasis on public education in fields of practical application may be expected to increase. This would imply some shift in the pattern of early employment, and eventually a higher level of skill throughout the economically active population. It is through the younger age groups that new skills can best be introduced into a young population.

#### Infirmities

In every population there are people afflicted with infirmities which prevent or curtail their working activities. Blindness, deafness, or protracted illness may make it impossible to follow a regular occupation; or, as some scattered census data on this subject suggest, may restrict them to agricultural work, where partial unemployment is more easily absorbed. Especially during past periods, when medical services were less adequate than they are now, infirmities have withdrawn some people of all working age groups from economic activity, and have reduced the vigour and efficiency

<sup>10/</sup> See J. D. Durand, "Population Structure as a Factor...", *op. cit.* pp. 7 to 8.

of others. Some ailments have a greater incidence with advancing age, and contribute to the pattern of retirement from work shown in Table 3. The available statistical material on the subject, however, is scarce and not very reliable; special studies are probably necessary before the effects of infirmity can be made clear.

#### Leisure

There are also people of working age whose wealth or social position enables them to abstain from work, through choice rather than necessity. Breakdowns of the economically inactive population in census data show some of them in the "living on income" category. Such groups are fairly small in relation to the entire population. Their influence in the economy, however, may be disproportionately large, because of the resources that they control.

#### Marital status

Marriage and family responsibilities are associated in various ways with participation in economic activity. Eventual marriage is almost universal in Far Eastern countries. Among men, as we have seen, so is some form of occupation: the same social and economic pressures encourage both. Women, on the other hand, often must choose between one and the other, for household duties and motherhood are incompatible with many occupations. As mentioned earlier, this does not prevent women from participating in the essential work of the economy, but it does interfere with their taking up work outside the home, particularly regular wage labour. This conflict is often expressed in strong sentiments against the wage employment of women away from the family, or in the feeling that certain occupations are simply not women's work.

In spite of this widespread prejudice against it, some employment of women is actually found in every country. There are various solutions to this conflict. In Japan, where women in considerable numbers have gone into factory labour as well as other work, many have delayed marriage beyond the usual ages. Women also help on a part-time basis in the production of articles made in household or "cottage" enterprises, or in agriculture, where their work can be added to other household duties. As their childbearing period ends, older women become more available for other work. Prejudice does not effectively prevent the hiring of women when their wages are lower than those of men. Even the family responsibilities of women, where they have begun to enter occupations outside the home, have become lighter, as attested by the lower birth rates of industrial areas. But where these responsibilities are still relatively heavy, as they are throughout the Far East, they are a strong barrier to the greater use of women's efforts in productive pursuits.

#### Types of occupations

The occupational composition of a population indicates one of its solutions to the problems of livelihood. The entire region of the Far East is heavily

dependent on agriculture, and this is reflected in high proportions of the economically active reporting farming as their occupation. <sup>11/</sup>

Concentration of people working in agriculture has generally been associated with a low output per worker. In Asia this situation is found together with young age structure, and therefore high ratios of dependants to the economically active, which in turn is favourable to the early employment of the young. Conducted on a small scale, agriculture also depends on traditional techniques which do not require formal education. It offers a way of caring for the aged and infirm, giving them an opportunity to contribute slightly to their own support. Thus it has been known as a means, whereby a large population can be maintained even though many of them are only partially employed — a field of "disguised unemployment". Increased levels of living in predominantly agricultural countries are believed to require a shift in occupational composition, away from farming and towards a larger share of more productive pursuits; studies of changing occupational structure thus have a direct bearing on "economic development".

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<sup>11/</sup> It is necessary to study occupational composition, too, separately by sex. It appears more likely for women to be reported as "occupied" if they are members of farming households, and this has the effect of exaggerating the numbers of people engaged in agriculture.

#### Rural and urban residence

The patterns of manpower utilization in agricultural countries are, of course, patterns established in a rural environment. It is in large cities of rapid growth and frequent innovations that there has been a steady pace of change in economic life. Accordingly, in the Far East the spread of industry has been, as elsewhere, primarily an urban phenomenon.

In many Far Eastern cities, the distribution of economic activity already ceases to resemble that of the country districts. In Japan, for example, the urban populations were the first groups to deviate from the prevailing patterns; industrial and commercial occupations are still highly concentrated in the cities of substantial size. Practices of early employment, the discouragement of female wage labour, low levels of technical skill, traditions of agricultural livelihood, and even the disadvantages of age structure, are all more characteristic of the rural than of the urban sections of these countries. <sup>12/</sup> One of the important ways to study manpower changes in the modern world, therefore, is through the growth and changing composition of cities.

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<sup>12/</sup> Young adults migrating to cities leave rural sections with a more burdensome age structure than before. In this respect cities, which gain the services of young and vigorous workers, do so at the expense of the rural communities.

# THE SAMPLE SURVEY: ITS USES AND PROBLEMS

by J. Mayone Stycos

## INTRODUCTION

In the history of the development of more efficient and more democratic government, the invention of the census plays no small part. Yet, for all its well known virtues, the census has serious drawbacks. It is a very costly procedure, can be carried out only infrequently, and since it serves the interests of many branches of government the number of questions possible in any one area is quite limited. The development of the sample survey immensely facilitated the gathering of data by government, for most of the advantages of the census are maintained without its disadvantages. Thus, the sample survey can be accomplished relatively cheaply and rapidly; and detailed data in any particular area of its population's behaviour can be gathered with considerable speed by governments employing sampling techniques. The one obvious disadvantage of this method (which at the same time is the basis for all of its advantages) should be mentioned — the small number of cases.<sup>1/</sup> This means both that the conclusions drawn are subject to some error, and that the number of possible tabulation breakdowns (e.g., fertility by sex, by age, by marital status, by residence) are more limited. Modern statistical methods, however, minimize both of these disadvantages. In the first case, by means of scientific selection of cases, the possible error can be made to be quite small, and its limits ascertainable. Moreover, modern correlational methods (e.g., factor analysis, and partial and multiple correlation) can determine the complex inter-relationship of a number of variables without the necessity for a large number of cases.

The first and most obvious application of this technique is the sample census which has been employed successfully in a number of countries. At great saving in time and cost the sample census can be used in place of a census of population, or for purposes of gathering needed data between censuses. In this paper, however, other but related applications of the sample survey will be considered. The examples used throughout are taken primarily from Puerto Rico, partly because of the writer's experience there, but primarily because they take place in a Latin-American setting.

<sup>1/</sup> Sample size varies widely depending upon the budget and the degree of precision required. Examples of national surveys in the United States are the monthly Current Population Survey (25,000 households), the annual Survey of Consumer Finances (3,500 households), and those of the commercial research organizations, whose national samples often number only in the hundreds.

## USES OF THE SAMPLE SURVEY

### General inventories of human needs

The policy-maker in the rapidly developing country is faced with a wealth of problems. Striving toward the general goal of human betterment in his country, he must face the very practical problem of where and how to allocate scarce resources toward this end. In an area where employment, levels of living, education, health, skills, housing, population density, etc. all beg for improvement, a government must establish broad priorities for the direction of its programmes; and then develop programmes which are geared to meet the specific needs. But more often than not, decisions in both these areas are based on impressionistic judgments rather than on facts. Since judgments vary widely, priorities and programmes are often determined according to the opinions of the more powerful or persuasive government departments or individuals. While the existence of scientific data cannot guarantee that this will not happen, it should at least make it less likely. Sample surveys which provide general inventories of human needs are one of the most useful tools which a government can employ in this regard.

Let us take as an example one such survey conducted in Puerto Rico which has provided data utilized by all government departments on the island.<sup>2/</sup> One thousand families were included in the sample, chosen in such a fashion as to be representative of Puerto Rico's 375,000 families. In other words, the same proportion of rural and urban, poor and rich, highland and lowland families are found in the sample as are found in the total population. Directed by two members of the Home Economics Department of the University of Puerto Rico, the interviews were conducted mainly by home economists. To illustrate the comprehensiveness of the survey, an outline of some of the topics treated is presented at the top of the following page.

To be effective, the sample survey must not only be scientifically sound, but its findings must be presented in such a way as to be both comprehensible to the administrator and utilizable to the technician. In the present instance, the text of the survey is presented in a straightforward, readable fashion, with a great number of graphs and

<sup>2/</sup> Lydia Roberts and Rosa Stefani, Patterns of Living in Puerto Rican Families (Rio Piedras, University of Puerto Rico Press, 1949). The sample was drawn from a larger sample of 6,000 families used by the Department of Labor for data on employment.

## Characteristics of the Families

Household Composition  
Income, Occupation and Education  
Fertility and Child Mortality

## Housing Conditions

Size and construction materials of dwelling units  
Crowding  
Kitchen facilities and furniture

## Health Conditions

Water supply and bathing facilities  
Pre-natal care of mothers  
Post-natal care of babies

## Diet

Type and adequacy of diet  
Home food production

## Educational Facilities

Exposure to printed media and radio  
Adult classes and clubs

photographs, while the appendix contains 230 detailed tables wherein many of the variables are classified by demographic characteristics. The latter is of course of great importance in the delineation of "target groups" (e.g., rural agriculturists, older urban residents, poorly educated mountain dwellers) for social programming.

Thus, the inventory discussed above might well serve as a model for areas where factual data are lacking in a number of diverse areas of need. Yet, it serves only as a beginning in many instances, for its very comprehensiveness precludes a depth of treatment of any one topic. Moreover, such comprehensive surveys usually but not necessarily preclude coverage of people's attitudes towards their needs and living conditions, concentrating as they do on factual data and facilities. They serve, rather, as a kind of broad map of needs, whereby priorities may be established and specific need areas pin-pointed for more detailed study. Pin-pointing can be of two types — of particular groups or classes in the population, or of a particular topic requiring more intensive research. The remainder of our examples will illustrate these two types.

### Health surveys

In most areas of the world it does not require much research to indicate that more public and private medical facilities and health education services are needed. Yet, facilities and services by themselves are often not enough.<sup>3/</sup> Populations of little income and education may not be fully aware of the facilities; they may harbour superstitious fears concerning modern medicine; they may not recognize symptoms of ill health; they may feel that "home remedies" and local "curers" are sufficient for their needs, and so forth. On the other hand, medical personnel may not fully understand the customs, fears, and superstitions of the lower classes in the population; indeed, not infrequently the more technically competent and "professional-

<sup>3/</sup> For recent studies in this area, see L. Saunders, Cultural Differences and Medical Care (New York: Russell Sage, 1954); M. Mead (Ed.), Cultural Patterns and Technical Change (Paris, United Nations Educational, Scientific and Cultural Organization, 1953); and B. Paul (Ed.), Health, Culture and Community - A Book of Cases (New York: Russell Sage, 1955).

ized" the medical worker becomes, the less able is he to deal successfully with human beings whose cultures differ markedly from his own. But just as the successful businessman must know his customers, so must the provider of medical services know his patients; and just as businessmen are coming to rely less on impressions and more on "consumer research" so are social programmers in the medical field relying more on studies of their actual and potential clientele.

A study in this general area has recently been completed in Puerto Rico, basing its sample not on the total population, but the population served or potentially served by a district hospital.<sup>4/</sup> While the sample cannot be said to represent Puerto Rico as a whole, it will undoubtedly provide much information applicable to other districts of the island, at the very least providing clues for further research in this area on a broader scale.<sup>5/</sup> It has the advantage, moreover, of dealing with a homogeneous population - in the sense that they are all exposed to the same facilities and services. While the data from this survey have not yet been analysed, such topics as the following were covered:

- ... How much does the average family know about health?
- ... What symptoms do they recognize as indicating poor health, and which do they not recognize as such?
- ... What happens when a person in the household gets sick?
- ... From what sources is counsel and aid sought?
- ... To what extent is the family exposed to and influenced by health information provided by the mass media?
- ... To what extent is the family aware of and to what extent does it utilize existing facilities?
- ... What are the opinions concerning the facilities?

Such information has never been ascertained in Puerto Rico in any scientific sense, and should prove invaluable to the administrators of medical care programmes.

<sup>4/</sup> The district hospital in Puerto Rico serves several municipios. In addition, many municipios have their own, smaller hospitals.

<sup>5/</sup> See p. 34 for a brief discussion of pilot studies.

## Surveys in the economic sphere

For any nation, but especially for those attempting economic development, detailed knowledge of the economic patterns, resources and attitudes of its citizens is vital. Where industrialization is in progress, information on two kinds of capital - human and material - are of special significance.

Human resources. Often a country's chief resource is human - its manpower. The basic problem is how best to utilize this resource. What problems are involved in the shift from traditional agricultural occupations to a wage system stressing wage mobility? How can farmers be induced to use more productive methods? How to encourage migration from areas of surplus population to those of under-exploited resources; how to make skilled industrial workers out of the rural unskilled; how to prevent industrial turnover, absenteeism, and so on, are all problems which yield themselves to study by means of the sample survey.

A project is currently underway in Puerto Rico which is dealing with such questions. In this case, both an island-wide sample of industrial workers and a sub-sample composed of all workers in a few key factories are being used.

Financial resources. The planning of a successful programme of industrialization is facilitated by detailed knowledge of the nature and amount of potential capital which can be provided by the population. Knowledge of the extent and kind of savings, spending, and investment patterns of its citizens can instruct a government in its approach to raising capital for industrialization. Such information can make planners more sensitive to the kinds of programmes that should be avoided, giving them clues as to how existing patterns can be utilized and channelled into more desirable areas, and how to direct educational campaigns for the change of undesirable patterns.

A useful study of this nature has recently been conducted at the University of Puerto Rico, the main focus being the study of individual savings as they affect the accumulation of capital for investment.<sup>6/</sup> Since the poorest groups in the population cannot save enough to have any effect on capital for investment, the sample was restricted to those families with annual incomes of \$2,000 or more (10 per cent of all families in Puerto Rico). A sample of 600 in this category was drawn from the Department of Labour sample previously mentioned, and a lengthy interview conducted with the heads of these households.

One of the important findings of this study might be summarized. While no difference was found in the number who saved and the amount saved in Puerto Rico as compared with continental United States, important differences in the forms of saving were encountered. Puerto Ricans tend to put their money into real estate or into expanding their own small retail establishments. Little money is de-

posited in banks, a heavier load of current debt is carried, and greater reliance on instalment buying is evident. Such practices drain off capital which is greatly needed for industrial expansion.

## Studies of migration

Ordinarily, studies of migration, both internal and international, provide data only on the amount, rate and direction of geographical mobility. Clearly, more detailed information on the characteristics, motivations and social patterns of immigrants and emigrants would be of considerable assistance to governments and to social science. To illustrate a few of the possible practical advantages:

1. Studies of the characteristics of emigrants can help governments to estimate what they gain and lose by encouraging or discouraging emigration. For example, in a study by Mills, Senior and Goldsen, it was found that Puerto Rico was not only losing individuals in the most productive age group, but that contrary to expectation, emigrants tended to be the better educated, urban, skilled or semi-skilled workers, and from non-agricultural occupations.<sup>7/</sup> This came as a surprise to many government officials, who viewed emigration as an aid in alleviating the pressure of more unproductive and depressed portions of the population. Such knowledge can direct educational programmes in encouraging and discouraging emigration for different segments of the population.

2. Studies of the motivations of migrants can help in predicting or interpreting the rate of mobility. If the motivation is purely economic, it should fluctuate with changing economic conditions, other things being equal. Thus, the Puerto Rican curve of net migration to the States is astonishingly similar to that of the national income for the years 1910 to 1945, a fact which is quite consistent with the motivational data provided by the Mills study. It would also seem important to determine the degree of realism with which prospective migrants view the receiving nation. Excessively optimistic or pessimistic attitudes which impede migration or cause wasteful migration (returnees) could then be influenced by the provision of adequate and accurate information.

3. Studies of the social structure of immigrant groups can tell us the degree to which they are being assimilated into the new culture, and give us some idea of the extent to which changed economic conditions will lead them to return to the homeland. For example, it is plausible to assume that a highly cohesive immigrant group, which "shares its wealth" by a tight network of social relationships emphasizing reciprocal aid, will respond less immediately to economic fluctuations than a less cohesive group.

Sample surveys of out-migrants can simply and cheaply be realized by such devices as interviews at ports of embarkation; or even more efficiently,

<sup>6/</sup> E. Maccoby and F. Fielder, Savings Among Upper-Income Families in Puerto Rico (Rio Piedras, University of Puerto Rico Press, 1953).

<sup>7/</sup> C. W. Mills, C. Senior and R. K. Goldsen, The Puerto Rican Journey (New York: Harper and Bros., 1950).

during the trip itself, the interview conducted by transportation personnel co-operating with a government agency. Studies of internal migration and of immigrant groups usually require more elaborate procedures. An illustration of the latter type of survey is provided by the Mills study referred to above.

In this case a survey of Puerto Rican born residents of New York City was desired, to answer many of the questions posed above. Since the location of Puerto Rican residents within the city was not precisely known, various ingenious methods were used to ascertain the city blocks with highest Puerto Rican concentration. Data were gathered from a religious organization on the location of Protestant churches with Puerto Rican ministers, from an importing firm on the location of Spanish retail grocery stores, and from schools on the number of Puerto Rican students in their classes. By these means, the blocks of highest probable Puerto Rican concentration were isolated and a random sample interviewed (i.e., every tenth apartment which proved to have Puerto Rican inhabitants was included in the sample). In this manner, 1,113 hour and a quarter interviews were obtained which provided a wealth of data on a group concerning whom practically nothing was known with any certainty.

#### Studies of human fertility

Unlike the death rate, which in advanced societies shows little fluctuation, birth rates tend to be responsive to economic changes. For the demographer and social planner, the prediction of trends in fertility is of great importance, and for nations burdened by population pressure, the reduction of average family size often seems desirable. Both for predictive purposes and for purposes of inducing change, detailed knowledge of attitudes with respect to fertility is necessary.

Surveys are useful in giving an indication of the number of children which various classes in the population desire. Analysed and interpreted with care, such data may provide indications of future trends and fluctuations in the birth rate. But in areas where family planning is not yet a part of the culture, such information alone may be misleading. It is also essential to ascertain the intensity of such desires, the knowledge of means to achieve them, and the attitudes toward the methods available. In addition to such information, it is useful to know something about the social institutions which govern the motivations.<sup>8/</sup>

Religion. Religion is often a powerful influence in inhibiting the use of family limitation. It is important to ascertain both the views of the clergy and those of the laity on the subject of birth control before making predictions concerning its future in the area.

<sup>8/</sup> For an extensive treatment of this subject, see F. Lorrimer, Culture and Human Fertility (Paris, United Nations Educational, Scientific and Cultural Organization, 1955).

While the attitudes of the clergy in some religions can be taken for granted, other religions have no clearly formulated policy on family planning or no organization to enforce it if they do. Many Protestant denominations and sects are in this category, as well as certain Eastern religions. A recent survey of the attitudes of Buddhist priests in Ceylon is interesting in this regard.<sup>9/</sup> Since Buddhist teaching takes no explicit stand on this subject and since family limitation has not yet become an issue in Ceylon, the views of individual priests are of special significance. It was found that the well educated priests, the leaders of Buddhist thought, were uniformly in favour of family planning, while the poorly educated village priests were generally opposed, though not strongly so. The implications for any programme seem quite clear.

It would be incorrect, however, to assume that the views of the clergy are necessarily those of the parishioners. In Puerto Rico, where the Church has actively campaigned against family limitation for some time, the average Catholic favours birth control, and a large proportion of the population has used it. In a report which contrasted the attitudes and behaviour of Catholics with non-Catholics in Puerto Rico, it was found that in many instances the non-Catholics tended to be somewhat more conservative as regards family planning than Catholics.<sup>10/</sup> Thus, any programmes or predictions based on the thesis that the Catholicism of Puerto Ricans stands in the way of fertility reduction are grounded on erroneous assumptions.

Marriage. Both in Latin America and the Caribbean area, mating of the sexes is frequently accomplished without legal or religious sanctions. Such unions, termed consensual, free, or common-law, undoubtedly have implications for fertility, and the intensive study of this institution is of importance to sociologist, demographer and social planner. It is commonly believed, for example, that the consensual union is productive of high fertility. Sample surveys in Puerto Rico and Jamaica have indicated that there may be some truth in this belief, in the sense that where marital unions are unstable, the individual, especially the male, feels less responsibility concerning the number of offspring produced. Moreover, there is some tendency to desire children in each union, thus possibly raising the total number of children a given individual will eventually have. But the evidence seems stronger that the unstable union is productive of lower fertility in the long run because of periods of non-exposure to pregnancy between

<sup>9/</sup> B. Ryan, "Hinayana Buddhism and Family Planning in Ceylon", Inter-relation of Demographic Economic and Social Problems in Selected Under-Developed Areas (New York: Milbank Memorial Fund, 1954).

<sup>10/</sup> J. Stycos, K. Back and R. Hill, "Contraception and Catholicism in Puerto Rico", Milbank Memorial Quarterly, vol. XXXIV, No. 2 (April 1956), pp. 150 to 159.



unions.<sup>11/</sup> In any event it is clear that both because of its relevance to fertility and because of the number of social problems it involves, the consensual union - its structure and function, and the motivations of its participants - begs further research.

Obviously the problems involved in gathering such complex and intimate data are quite different from those which occur with respect to inquiries on migration and economic behaviour. Such studies have, however, been successfully undertaken.

For data concerning ideal family size, ordinary polling methods are feasible. A number of commercial polls have included such questions in their surveys, and these are well summarized by Jean Stoetzel.<sup>12/</sup>

For the more complex data specially designed surveys seem necessary. The writer has participated in several such surveys in Puerto Rico and Jamaica. One was a routine survey undertaken in Puerto Rico, but data on the frequency of sexual intercourse and use of birth control turned out to be without value. In an area where little is known either of the appropriate techniques or of the subject matter itself, it is probably wise to precede the large-scale survey with a small-scale "pilot" or more exploratory investigation. In both Puerto Rico and Jamaica, small samples (a total of 75 to 100 women and their mates) have been selected from different parts of the islands, and given long (four to six hours) relatively unstructured interviews by highly trained personnel. In this fashion a great deal was learned in terms both of techniques and content which could be applied to the larger sample survey. In Puerto Rico, the larger survey has recently been completed and is discussed briefly in the following section.

#### PROBLEMS OF SAMPLE SURVEYS

In the physical sciences, measurement is performed by means of fairly precise instruments, and, since the object of measurement is ordinarily non-human, it can be measured for as many times and in as many ways as the scientist pleases. Thus, the measurements can be checked many times, by the scientist and by other scientists. The main tool of the social scientist is the interview, which is neither as precise nor as repeatable because it deals with the verbalizations of human beings. However, there is one major advantage in having human beings as the subject of inquiry -

unlike non-human objects they can report about themselves. Thus, in order to learn a man's height and weight, he can be asked; it is not necessary to weigh and measure him. And in an hour he can be asked a hundred such questions without bringing a hundred different measuring instruments to bear. While this is a great advantage, it is immediately clear that it is not an unmixed blessing. The presence of intelligence and will in the human means that our object of measurement may (1) not be willing to respond; (2) not know how to respond; (3) respond untruthfully. These problems are here discussed in some detail, especially as they might apply to sample surveys in relatively under-developed areas.

The social scientist cannot compel his subjects' co-operation. Even if this were legally possible it would certainly be self-defeating to require answers concerning private aspects of one's life such as future plans and aspirations, or details of family behaviour. Yet it may be hard to believe that respondents will voluntarily give information on such intimate matters, especially in Latin America where a man's home life is particularly sacred.

The evidence from Puerto Rico would indicate that no such problem exists. From the table below we see how few people have refused to co-operate with interviewers.

Survey	Number of persons interviewed	Percentage who refused to be interviewed
Roberts and Stefani (Inventory)	1,000	0.2
Maccoby and Fielder (Savings)	603	2.5
Mills, Senior, Goldsen (Migration)	1,113	5.0
Stycos (Fertility)	143	1.7
Back, Hill, Stycos (Fertility study summarized below)	888	1.4

This low refusal rate can be attributed to at least three factors:

First, the traditional courtesy and hospitality of the Latin American to individuals who visit his home; second, at least on the part of the lower class, a feeling of being honoured by the visit of a person of higher social status; third, skill on the part of interviewers in inspiring confidence. It is interesting in this regard, that the two studies in the table showing the highest refusal rates either take place in a non-Latin setting (Puerto Ricans in New York) or deal with middle and upper class subjects (Maccoby - families with \$2,000 or more yearly income). For whatever reasons, it is clear that even with respect to the most intimate topics there has been no problem in getting people to consent to an interview. In the writer's opinion the real problem is whether we can rely on what they say.

<sup>11/</sup>See J. Blake, "Family Instability and Reproductive Behavior in Jamaica", Current Research in Human Fertility (New York: Milbank Memorial Fund, 1955); P. Hatt, Backgrounds of Human Fertility in Puerto Rico (Princeton: Princeton University Press, 1952); and J. Stycos, Family and Fertility in Puerto Rico (New York: Columbia University Press, 1955).

<sup>12/</sup>J. Stoetzel, "Les attitudes et la conjoncture démographique - la dimension idéale de la famille", World Population Conference, United Nations Paper E/CONF. 13/288, Rome, 1954.

Invalid responses may spring from several general causes: lack of knowledge or understanding on the part of the respondent; a desire to please or impress the interviewer; a desire to mislead the interviewer because of unfavourable reactions to him or to the study. While space does not permit any detailed discussion of the ways in which these problems can be dealt with, a few general indications might be made.

Middle class researchers often overestimate the vocabulary and general sophistication of lower class respondents with little or no education. Consequently, the vocabulary used in asking questions may be such as to be largely incomprehensible to the respondent.<sup>13/</sup> The latter, however, rather than admit ignorance by asking for meaning, may volunteer a response at random. Obviously the only effective way of preventing such questions or question wordings is to ensure careful testing of the questionnaire before its final form is adopted.

Perhaps more frequent is the situation in which the respondent understands the question, but does not know or is unsure of the answer.<sup>14/</sup> Opinion pollers in the United States are familiar with the fact that rather than admit they do not know, people give opinions regarding issues about which they have never thought and indeed, in many cases, about which they have never heard. In a survey of attitudes toward family size on the part of lower class Puerto Ricans, it was found that a large proportion would both agree and disagree with virtually the same statements repeated at different times throughout an interview. At least three techniques are useful in handling such problems:

1. Screening questions, to determine whether the respondent knows about and has thought about the subject of the questions.
2. Cross-check questions throughout the interview.
3. Small-scale, qualitative pilot studies preliminary to the larger survey, which explore the range of respondent knowledge and attitude in a flexible and more detailed fashion.

For the suspicious and hostile respondent the only remedy is the interviewer skilled in techniques of rapport.

#### The training of interviewers

The problems involved in having the human being as the object of research have already been discussed. Corresponding problems arise from the fact that the very instrument of measurement in much of the social sciences is not only mechanical (the interview form) but human (the interviewer). Since this aspect of the research process is often

<sup>13/</sup>See, for example, L. Shatzman and A. Strauss, "Social Class and Modes of Communication" *American Journal of Sociology*, vol. LX, No. 4 (January 1955), pp. 329 to 338.

<sup>14/</sup>Often the respondent has only a vague idea, but renders a very precise statement. The jagged age pyramids of many nations show graphically how many people are only approximating when telling their ages.

underestimated, a few words on interviewer training seem pertinent.

Not uncommonly in a survey, while great care and expense are devoted to design, sampling, questionnaire construction and analysis, interviewers are hastily hired and trained. Since every link in the survey chain is of equal importance in the production of valid data, the neglect of any one area such as this can undermine the success of an otherwise competently executed investigation.

The ideal training programme has as its objective not only the communication of skills, but the establishment of high motivation on the part of the interviewers.<sup>15/</sup> These objectives, important in any job training programme, are especially problematical as regards interviewers, because of the unusual demands ordinarily made of them, their customary inexperience, and the short-term nature of the job. In the United States, efforts are being made by various agencies to develop a pool of part-time interviewers who can repeatedly be called on for work in various surveys. Such a procedure is beneficial not only in terms of creating experienced interviewers, but also in "professionalizing" the interviewer - thus giving him a sense of pride and responsibility in his work.

Since experienced interviewers are not yet available in most areas of the world, it becomes of importance to give the inexperienced interviewer a sense of identification with the particular survey. In the course of two- to three-week training programmes on human fertility surveys in Puerto Rico and Jamaica, various methods were used to accomplish this purpose:

1. The aims of the survey were carefully outlined to the staff.
2. Government officials were called upon to lecture to the staff on those problems facing government, the solutions to which could be aided by the project.
3. The strategic importance of the interviewer to the success of the project was continually stressed.
4. Efforts were made to develop an atmosphere of camaraderie among the interviewers, and a feeling of loyalty and respect for the projects' directors.

It is felt that the small additional expenditure (relative to the costs of the entire survey) involved in these efforts produced exceptionally rich data in an especially difficult area of study.

<sup>15/</sup>As regards skills, every feasible modern educational aid should be utilized in order to communicate the subtle techniques of interviewing in the relatively little time available. For the appraisal of training techniques tried in the Caribbean area, see J. Stycos, "Further Observations on Interviewer Training in Other Cultures", *Public Opinion Quarterly*, vol. XIX, No. 1 (Spring, 1955). See also "Unusual Applications of Research Studies of Fertility in Under-developed Areas", *Human Organization*, vol. XIII, No. 1 (Spring, 1954); and "Interviewer Training in Another Culture", *Public Opinion Quarterly*, vol. XVI, No. 2 (Summer, 1952), pp. 236 to 246.

## Sampling

The selection of cases for a survey in an under-developed area raises certain problems. There are often no ready-made samples representative of the country available to the researcher, and the cost of interviewing every nth family in the country (where such families might live many miles from each other) would probably raise field costs beyond the budget of any department. Actually, such a sample is seldom employed. Instead, relatively small geographical areas are used as the first sampling units. For example, if a country has 500 districts, it may be possible to first select every 10th district and then sample the individuals within 50 rather than 500 districts. (This assumes that the districts have roughly equal populations or can be arranged in such a way as to give more weight to the more populous ones, every individual in the country having an equal chance of being chosen - the basic principle of random sampling.)

But it is often the case that we want to sample only certain classes in the population (e.g. all the people who listen to the radio, or who have ever used birth control) and even if samples are already available to us, they may not contain data on these subjects. The most scientific procedure in such cases is first to choose a large sample in the manner described above, and to ask all those included in it only, e.g. "Do you ever listen to the radio?" Once we have in this way located radio listeners, we then choose a sample from this population. This technique, known as "double sampling" is also obviously expensive.

An alternative procedure, less desirable, but still useful under certain conditions, is to sample readily accessible populations, e.g. people who are in schools, hospitals, clinics or who apply for social services. Obviously, those who use such facilities are probably quite different from those who do not, and we could not generalize from them to the entire population. Still, special populations such as these, especially if we know in what way they differ from the general population, can provide us with useful information. An example from Puerto Rico will illustrate this method.

The information sought was why some lower class families never practise family planning, others do so occasionally and still others do so consistently. No sample study was available which would locate for us individuals in these groups, and consequently a screening or double sample seemed necessary. But the budget did not permit an extensive sampling procedure of this kind; nor, on the other hand, was it possible to call at people's homes and simply ask a blunt question about birth control. Consequently, a situation was required in which such intimate questions could be asked in a five minute interview, and where respondents would come to the interviewers rather than vice-versa.

It was decided to give the short interview to all patients who used any of the free services of the general out-patient clinics of seven public health centres and two hospitals located in various parts

of the island. Patients waiting to see physicians were shuttled to the interviewer's desk, where, with little or no preliminary, the short questionnaire was administered, as if it were part of the normal health centre routine. In this way, intimate questions could be asked without lengthy introductions, patients were pleased at a diversion from waiting and 3,000 interviews were taken at very little cost.

From this sample the sub-sample of different birth control types was drawn. Letters were then sent out on Department of Health stationery, signed by the physician in charge, requesting the patient to come to the clinic at a particular day and hour. If the patient did not show up, a second letter was sent with a re-appointment. If this failed, an interviewer was detailed to conduct a home visit.

A comparison of the original universe of 3,000 with census figures showed, as might be expected, that groups with no education and those with high school or more were under-represented. Other characteristics, such as residence and age, showed close approximations to the general population when the variable of education was controlled. Thus, once the direction of bias is known, allowances can be made for certain findings. Moreover, since the object of the study was not to discover the incidence of various characteristics, but rather to uncover the inter-relationship of certain psychological factors, the demographic bias is not serious.

## CONCLUSIONS

A few of the uses to which the sample survey has been put in a Latin American setting have been examined in this paper, and some of the field problems and sampling problems encountered in such surveys have been discussed. Three general recommendations might be advanced for areas which have not yet developed extensive facilities for undertaking such investigations.

1. A central survey bureau should be established to handle the demands of various government departments. The advantages of centralization are that:

- a. It would avoid the costly duplication of services arising when each department attempts to undertake its own investigations.
- b. It would preclude the charge of bias frequently levelled when a particular department does its own research.
- c. It would establish a core of professional specialists in the various core stages of the survey (design, sampling, questionnaire construction, interviewing, processing, analysis and presentation), which would not be possible where each department conducts occasional surveys.
- d. The bureau would act as a clearing house and stimulus for research. Certain of the personnel of such an organization could actively seek out the problems faced by various government departments which might be solved by means of the survey. In a sense

this would be the bureau's educational function. Moreover, it is often the case that a particular problem requires for its solution only a few questions in a survey. Several departments may have such problems, but the costs involved in carrying out a survey embodying only two or three questions might appear prohibitive. Since a survey involving a half-hour interview can often be conducted for nearly the same cost as one involving a five-minute interview, the needs of various agencies could be served in any one investigation - if such needs were systematically handled by a central bureau.

2. Programmes and facilities should be provided for the training of survey specialists. The competent survey specialist should have a good grounding in the social sciences and also possess a number of skills which can come only from experience. If a central bureau were established, an important part of its work would be to enable university graduates to acquire such experience by means of research "internships". In the absence of such a bureau, every effort should be made to provide university courses to equip the student with a practical knowledge of each stage of survey research.

3. If the establishment of such a bureau were not feasible, at least the preparation of a large multi-purpose or "master" sample should be undertaken, which would be at the disposal of governmental and academic groups. Another possibility would be greater utilization of commercial polling facilities where these exist. Here, too, it is often the case that a few questions can be purchased in a current survey at relatively small cost.

## BIBLIOGRAPHY

- W. Cochran, Sampling Techniques (New York, Wiley, 1953).
- L. Festinger and D. Katz (Eds.) Research Methods in the Behavioral Sciences (New York, Dryden Press, 1953).
- A. Garret, Interviewing, Its Principles and Methods (New York, Family Welfare Association of America, 1942).
- W. Goode and P. Hatt, Methods in Social Research (New York, McGraw Hill, 1952).
- M. Hansen, H. Hurvitz and W. Madow, Sampling Survey Methods and Theory (New York, Wiley, 1954).
- H. Hymen, Interviewing in Social Research (Chicago, University of Chicago Press, 1954).
- Interviewing for NORC (Denver, National Opinion Research Center, 1945).
- M. Jahoda, M. Deutsch, and S. Cook, Research Methods in Social Relations (New York, Dryden Press, 1951).
- R. Merton, J. Fiske and P. Kendall, The Focussed Interview, Bureau of Applied Social Research, Columbia University (Mimeographed).
- M. Parten, Surveys, Polls and Samples: Practical Procedures (New York, Harper, 1952).
- S. Payne, The Art of Asking Questions (Princeton, Princeton University Press, 1951).
- J. Stycos, Family and Fertility in Puerto Rico (New York, Columbia University Press, 1955), Methodological Appendix.

## RECENT DEMOGRAPHIC TRENDS IN CUBA, HAITI AND THE BRITISH CARIBBEAN

by G. W. Roberts

(Paper prepared for the Seminar on Population  
Problems in Latin America)

The countries dealt with in this brief survey - Cuba, Haiti and the territories of the British Caribbean - were all influenced in their early history by an important circumstance, their concentration on the production of sugar on a plantation basis. However, the common elements in the early history of these territories must not be over-emphasized, despite the fact that they conferred certain common demographic characteristics on all the territories. It remains true that Cuba, with its Spanish language and tradition, and Haiti, early freed from French rule and probably much less influenced by cultural contacts with European populations after that time pursued courses in the post-slavery era differing basically in their historical and cultural setting from those followed by the British Caribbean. Of particular relevance in this context is the difference in quality and extent of the demographic records instituted for the three divisions. Only in the British Caribbean have both a reliable registration system and a long series of censuses been developed. Censuses have been taken in Cuba since the eighteenth century, but its vital registration remains incomplete. In Haiti, where no effective vital registration throughout the country is maintained, only one modern census has been taken, that of 1950.

The total population of the countries studied here was in 1953 only 12.4 million. Cuba, with a population of 5.8 million, accounted for more than half of this, while the population of the British Caribbean was 3.4 million and that of Haiti 3.2 million. Though sugar no longer plays the important role in the economies of these territories that it did in the past, all remain largely dependent on agriculture, the proportion of the gainfully occupied males in agriculture being for the most part slightly over 50 per cent.

In common with many other agricultural areas, the Caribbean territories face a prospect of growing population pressure on resources. This is perhaps most conveniently shown by crude densities. Only in the sparsely settled mainland colonies of British Guiana and British Honduras, where densities are 5 and 9 per square mile respectively, is there no problem of immediate population pressure on resources. The islands, on the other hand, show much higher densities, though the figure for Cuba, 130, is low by comparison with those for the others. In Haiti the density is 300, in Jamaica 340 and in Trinidad 350. Barbados shows the very high density

of 1,340, while in the other small islands densities range from 190 in Dominica to 630 in Grenada.

Because demographic data are more ample for the British Caribbean than for Cuba and Haiti, this analysis of migration, fertility and mortality leans heavily on the experience of the former territories, especially on that for Jamaica.<sup>1/</sup> It is possible that Cuba may have experienced movements in fertility and mortality similar to those witnessed in Jamaica. But it is not argued here that the movements in fertility and mortality of Cuba and Haiti conform faithfully to those observed in the British Caribbean.

### CURRENTS OF MIGRATION

The early development of Cuba, Haiti and the British Caribbean differed profoundly from that of the mainland Spanish colonies. Whereas the latter were exploited solely as sources of gold, silver and treasure in general, the island colonies, lacking resources of precious metals, were soon given over wholly to the production of sugar. This difference proved of great significance for the demographic history of the islands. For though the indigenous population in general sufficed for the labour required to exploit the mainland colonies, the establishment of sugar plantations in the islands called for large supplies of labour of a kind not available from the ranks of the indigenous inhabitants. Thus only by introducing suitable labour from elsewhere could the sugar plantations be established; slavery and the slave trade assured this supply.

Because of their common background as sugar colonies, the Spanish, British and French islands had to depend very heavily on slavery and the slave trade and were therefore initially largely populated by Negro slaves, though efforts were made from the earliest times to encourage settlements of Europeans, not only to control the slaves but also for the purpose of the wider expansion of the island colonies. The influx of Negroes was of demographic significance for two reasons. In the first place, it brought to the islands large bodies of a particular racial group that determined the racial composition of most of the territories. In the second place, the slave trade determined the size and rates of growth of the populations of these colonies in the early period of their history.

<sup>1/</sup> Much of the information on Jamaica is taken from a forthcoming study by the present writer entitled The Population of Jamaica.

With the passing of the slave régime other forms of immigration had to be resorted to, for the plantation economy continued after slavery and therefore the demand for cheap and abundant labour supplies had still to be met. Both the British Caribbean and Cuba began introducing indentured immigrants from various sources. The British West Indies took large numbers of East Indians and smaller numbers of Chinese, Portuguese and liberated Africans, while Chinese and liberated Africans were brought into Cuba in substantial numbers. In general the numbers of indentured immigrants were smaller than the acquisitions afforded by the slave trade, and with two exceptions had only small effects on rates of population growth. Only in British Guiana and Trinidad, in fact, were indentured immigrants introduced on a scale sufficient to determine rates of population growth.

Another current of migration opened in the nineteenth century - inter-Caribbean migration, or the movement from one to another of the territories considered here. This, notably in the case of British Guiana and Trinidad, complemented the movement of indentured immigration; indeed, these two colonies fostered immigration from every possible source. On the other hand, Barbados and most of the islands of the Eastern Caribbean lost population to British Guiana and Trinidad. Jamaica also experienced a sizeable emigration to Cuba, which was particularly strong between 1911 and 1921, but, as far as is known, Haiti was not involved in this current of migration.

Still another current of migration developed in the late nineteenth century, reaching its zenith in the first quarter of the present century. This was the movement from the West Indian islands to more distant areas, such as the United States of America. This affected the British colonies especially, considerable numbers emigrating from Barbados and other islands of the Eastern Caribbean. In fact this movement, together with that to British Guiana and Trinidad, was sufficient to induce appreciable declines in the population of Barbados and of several of the other smaller islands between 1891 and 1921. In the case of Jamaica, while there was no actual decline in population, the emigration to Cuba, Panama, Costa Rica, America and elsewhere in the first quarter of the present century was such that population growth in the intercensal interval 1911-21 was the lowest ever experienced during the century of census taking. Cuba also experienced emigration, appreciable numbers emigrating to the United States during this period.

These movements, which affected mainly the British Caribbean islands, were possible only because of the absence of restrictions against immigration into the receiving countries prior to 1921. The introduction of restrictions against immigration into the United States and elsewhere put an end to large-scale emigration from the British Caribbean. Whereas up to 1921 emigration measurably affected the rates of population growth in these territories, its effect in the post-1921 period has

been negligible, and in the light of the vastly altered patterns of natural increase has had no important effects on population growth.

It is an ironic development of recent migration policy in the British Caribbean that these territories have themselves imposed restrictions on immigration, not merely from foreign countries but also from neighbouring British territories. This has virtually halted the inter-Caribbean migration that flourished before 1921.

Some emigration from the West Indies has taken place during the past three or four years, mostly, it seems, to the United Kingdom. In 1954, for instance, total net emigration from Jamaica amounted to 8,400, somewhat more than the average net outward movement during 1911-21, but recorded net emigration from other territories has been very small. It is too early to say whether this new emigration will in the near future attain levels sufficient to have any marked influence on rates of population growth.

#### TRENDS IN MORTALITY

Throughout the British Caribbean, it seems, there were no declines in mortality prior to 1921. Before this date only a rudimentary control over mortality was in force. Death rates remained high, generally over 20, and in periods of epidemics or of economic depression much higher levels were recorded. The year 1921 can in fact be taken as marking the commencement of an era of mortality control. The cumulative effects of many advances in sanitation, public health and medical techniques were by this time sufficient to induce steady falls in mortality, particularly among infants. Accompanying this downward trend in mortality after 1921 have been two interesting features signifying clearly the growing control over disease in general. In the first place, the very marked variations from year to year, themselves indicative of weak control over disease, have largely disappeared. In the second place there has been a general convergence to a more or less common level of mortality throughout the West Indies.

These mortality declines can be depicted in a variety of measures. Here we consider briefly infant mortality, crude death rates and the average length of life. Infant mortality and crude death rates for the West Indies at the time of the commencement of mortality decline (1921-25) and at 1953 are shown in Table 1, while values for the average length of life for a number of territories are given in Table 2. In the course of this discussion, attention will also be directed to some significant features of the declines witnessed.

Before 1921 infant mortality rates in the West Indies were generally about 200, though at times rates nearer 100 were recorded. Rates were always highest in Barbados, being consistently in excess of 300 there and at times exceeding 400. For the period 1921-25 infant mortality rates were over 200 in three territories and between 150 and 200 in four; the range was from about 300 to 100

TABLE 1. VITAL RATES FOR THE BRITISH CARIBBEAN: 1921-25 AND 1953.

Territory	Infant mortality rates		Death rates		Birth rates	
	1921-25	1953 <sup>a/</sup>	1921-25	1953 <sup>a/</sup>	1921-25	1953 <sup>a/</sup>
Barbados	313.5	138.6	32.9	13.6	35.0	33.1
British Guiana	175.0	79.3	27.7	13.3	31.8	44.1
British Honduras	155.2	87.1	24.8	10.8	38.0	39.6
Jamaica	175.8	62.7	23.5	10.4	36.5	34.4
Antigua	215.9	93.7	27.2	12.2	34.1	34.5
Montserrat	166.0	113.2	18.6	14.9	32.1	31.1
St. Kitts-Nevis	228.4	84.5	27.6	13.2	34.7	38.1
Virgin Islands	136.7	78.9	20.2	11.1	38.8	42.5
Trinidad	133.1	69.8	21.7	10.7	33.1	37.7
Dominica	162.3	129.4	23.3	13.4	37.6	35.1
Grenada	106.1	67.6	18.4	13.1	35.1	39.7
St. Lucia	125.1	113.1	22.2	13.8	37.3	36.6
St. Vincent	115.3	123.0	18.8	15.5	38.3	42.2
Total	174.4	77.2	24.3	11.5	35.1	36.8

<sup>a/</sup> Some of these rates are provisional.

and the mean for the whole region was 174. The steady decline experienced since 1921 has meant that by 1953 all major territories, with the exception of Barbados, had infant mortality rates under 100, while in only four of the smaller islands were rates above 100 still recorded. The average for the whole region was 77, or 56 per cent lower than the level 30 years previously. The rate for Barbados, 139, was still the highest, while the lowest was that for Jamaica - 63. Thus, in contrast to the situation of 1921-25, the range of infant mortalities narrowed appreciably. The rate for Grenada in 1953 was also low - 68, and the recent experience of this island deserves some attention in view of the intensive efforts made there to control this phase of mortality. Medical, nutritional and public health measures applied in the last few years have resulted in marked reductions in infant mortality, the latest rate (1954) being 48, the lowest so far witnessed in the West Indies. In 1954 there were only 166 infant deaths in a population of 86,000, as compared with 244 deaths in 1921-25 when the population was only 66,100.

The progress made in the general control of mortality is again reflected in the crude death rates. In 1921-25 the death rate for the whole British Caribbean was 24, and the average number of deaths per year 49,700. Barbados showed the highest mortality, with a rate of 33, while in only three of the smaller islands were rates under 20 (Table 1).

Whereas the total population rose from 2.0 million in 1921 to 3.4 million in 1953, the average number of deaths declined from 49,700 to 38,900. By 1953 the death rate for the whole region was more than halved, falling to just over 11. The considerable reductions in infant mortality in Barbados meant that this island no longer showed the highest death rate; so marked was the decline in infant mortality here that the crude death rate was reduced by 59 per cent, a greater gain than that registered in any other colony. The general convergence to a more or less common level of mortality is evident in the narrowing of the range of death rates; the highest being 15 for St. Vincent and the lowest 10 for Jamaica.

TABLE 2. AVERAGE LENGTH OF LIFE IN YEARS FOR FOUR WEST INDIAN POPULATIONS: 1890-92 TO 1950-52.

Territory	Sex	1890-92	1901-02	1910-12	1920-22	1930-32	1945-47	1950-52	Gains,
									1921 to 1951
Jamaica	M	36.74	-	39.04	35.89	-	51.25	55.73	19.84
	F	38.30	-	41.41	38.20	-	54.58	58.89	20.69
Trinidad	M	33.7	36.73	38.97	37.59	44.51	52.98	56.31	18.72
	F	36.2	38.75	40.95	40.11	46.95	56.03	58.45	18.34
British Guiana	M	22.8	-	29.9	33.5	40.3	49.32	53.15	19.7
	F	26.9	-	32.4	35.8	42.6	52.05	56.28	20.5
Barbados	M	-	-	28.7	28.5	-	49.17	53.41	24.9
	F	-	-	32.5	31.9	-	52.94	58.00	26.1



Improvements in mortality are perhaps most satisfactorily summarized in terms of the average length of life, values for which are given in Table 2 for four British Caribbean populations. Barbados shows marked gains as a result of its improvement in infant mortality, additions of between 25 and 26 years to the average length of life of 1921 being recorded within a period of 30 years (1921-51). Gains elsewhere, though smaller in magnitude, are none the less impressive, ranging from 19 to 21 years. Admittedly the average length of life for the most favourably placed territory (Jamaica) in 1951 - 55.7 years for males and 58.9 for females - was still about 4 years lower than the corresponding values for the United States non-white population. But so considerable have been the falls in death rates between 1946 and 1951 that if these continue unchanged for another 15 years the general level of mortality in the West Indies may approximate very closely that now experienced by European populations. Declines in mortality at all ages under 60 have been contributing to gains in life expectancy at birth and at all higher ages. Thus, in Jamaica, the declines in death rates for a wide portion of the life span have been between 5 per cent and 6 per cent per year over 1946-51, while for the age interval 15-20 the male rate has declined by nearly 10 per cent per year.

An interesting feature of the reductions in mortality has been the marked improvements noted in infant mortality in the urban areas. This can be well illustrated from the rates for Jamaica. Before 1921 infant mortality in the Kingston-St. Andrew area (that is, the capital and its suburbs) ranged from 188 to 234 and was usually much higher than rates for other parishes. However, owing apparently to the more effective application of measures of public health and sanitation in the urban district after 1921, it was here that the greatest progress in the control over diseases affecting infants, especially diarrhoea and dysentery, has been achieved. In 1943 the infant mortality rate for the urban district was down to 86, one of the lowest in the island. Still more impressive reductions in the urban rate took place after 1943 and the latest rate (1954) is only 45, or about one-fifth of what it was in 1921. In that year the urban district had an infant mortality (199) higher than the rate for the whole island (176). By 1954 the position had so changed that the rate for the urban district was considerably lower than the island average (66) and in fact lower than all other parish rates. Thus it is within the urban district that the greatest success has attended efforts to control infant mortality. In fact the urban level of infant mortality now constitutes the standard towards which the rural areas of the Caribbean territories have to aim. This, however, does not mean that there has been a complete reversal of the general urban-rural mortality differential of the past. Even though, because of the particular composition of the urban population, crude death rates for the urban district are now among the lowest in the island, the most favourable rates

are still to be found in two rural parishes which have long shown comparatively favourable mortality positions.

Another significant aspect of recent mortality declines in the British Caribbean has been the changing patterns of cause of death. Again, this can be illustrated in some detail from the experience of Jamaica. A study of mortality from eight broad groups of causes of death, which together account for about 70 per cent of the island's total deaths, indicates, the directions in which gains in mortality have been principally achieved. The rate of decline has been greatest in the case of malaria, the death rate for which fell by 32 per cent for the males and 45 per cent for the females during 1946-51.<sup>2/</sup> Death rates fell from 88 to 59 per 100,000 for males and from 74 to 45 for females. Substantial reductions over the same period have also been recorded in diseases of the digestive system, respiratory diseases, syphilis and tuberculosis, all of which indicate declines in excess of 20 per cent within the 5-year period. This may be illustrated from the death rates among the females. The death rate from digestive diseases fell from 142 in 1946 to 113 in 1953, equivalent to a decline of 23 per cent; the rate for respiratory diseases fell from 157 to 110, equivalent to a reduction of 27 per cent; the rate for syphilis fell from 61 to 44, that is by 21 per cent; the tuberculosis rate was reduced by 27 per cent, from 97 in 1946 to 71 in 1951. Indeed not only have death rates from these declined appreciably, but the absolute number of deaths from them has also fallen. Deaths for both sexes from five of the groups of causes studied which showed improvements amounted to 7,500 in 1946 and 6,100 in 1951.

By contrast, two groups of diseases, those of the circulatory system and cancer, are rapidly becoming major causes of death. The number of deaths ascribed to these causes increased from 2,800 in 1946 to 3,400 in 1951. Death rates from diseases of the circulatory system increased from 162 per 100,000 to 166 during this period, or by about 14 per cent. The death rate from cancer rose from 64 to 91 for females, an increase of 62 per cent, and from 53 to 59 for males, an increase of 14 per cent. Though as yet mortality from these two causes remains small by comparison with that in European populations, it is clear that the patterns of cause of death in the West Indies are rapidly approaching the form of those characteristic of European populations. This is particularly so in Jamaica, where as a result of the declines in mortality and fertility since 1921 the proportion of the population over 65 has risen more than in other territories.

The mortality experience of Cuba and Haiti cannot be assessed in detail because of paucity of data and incompleteness of registration. In fact, it

<sup>2/</sup> Though the death rates given here from various causes are based on the actual population, the rates of decline (per cent) quoted refer to mortality based on stationary populations.



is impossible to state with precision how the present levels of mortality in these countries compare with those for the British Caribbean. Published rates for Cuba indicate a decline in death rates within recent years, but rates for the present (about 7-8) are too low to be taken as a true picture of the country's mortality. Nor can any exact picture of the mortality position for Haiti be gained. The United Nations Mission of 1949 remarked on "a low level of public health and personal hygiene resulting in a serious waste of life caused by preventable diseases", and suggested that the death rate might lie between 25 and 30, which would put it higher than the general level for the British Caribbean in 1921-25, and which indeed suggests that declines in mortality in Haiti have been negligible.<sup>3/</sup>

The claim is sometimes made that the declines in mortality witnessed in some of the so-called under-developed areas have been achieved solely by the application of a particular medical technique or the successful attack on some specific disease. Such a claim is not substantiated by the experience of the British Caribbean, where, it is important to note, mortality declines have been in evidence since the early 1920's, and have continued steadily ever since. In fact it seems that here the commencement of mortality declines coincided with the establishment of effective laws of public health, and the growing efficiency in the medical and sanitary services in general. In Jamaica, for instance, though public health legislation had been introduced since the nineteenth century, these laws remained largely ineffective because they failed to confer on the central board of health the powers that would enable it to enforce the regulations it was empowered to frame since its inception. Again, attacks on specific diseases were initiated early in the period of mortality decline. For instance, in Jamaica the campaign against hookworm, launched with the assistance of the Rockefeller Foundation in 1918, probably proved of great value in instituting controls over a wide range of kindred diseases, and in virtue of its aim to educate the population in the benefits of improved personal hygiene and sanitation must also have played a part in the improvement of sanitation in the rural areas. Moreover, it is not to belittle the significance of the achievement of the control of malaria in British Guiana as a contributory factor in the improved health and general well-being of the population to point out that considerable declines in mortality were in progress long before modern campaigns against malaria were launched and that the rates of mortality decline after 1946 noted in British Guiana are not materially different from those shown in other West Indian populations. In short it appears that continuous declines in mortality have been possible largely because the tech-

nical and administrative machinery in these territories had by the early 1920's reached a stage of efficiency which enabled them to make better use of advances in medical knowledge and sanitation than in the past.

#### TRENDS IN FERTILITY

Perhaps one of the most significant factors about fertility in the so-called under-developed countries is that there are several marked differentials. The fact that they are generally considered as regions of high fertility does not mean that every geographical division of these countries or every social or cultural group of their populations show these uniformly high levels of fertility. The importance of such differentials has been discussed in a number of papers, one of the most interesting of which is Carvalho's examination of Brazilian fertility.<sup>4/</sup> Urban-rural differentials, differentials inhering in particular familial forms, differentials among racial groups - all these are encountered in the populations discussed here, and all are of some relevance to the theme of fertility trends in the Caribbean.

Urban-rural differentials, so notable a feature of European populations, also appear in marked degree throughout the West Indies. Using children/women ratios, Lowry Nelson has shown that the urban fertility is throughout Cuba lower than the rural.<sup>5/</sup> The general ratio for rural areas, 680, was more than twice that of the urban areas - 317. The same pattern is found throughout the British Caribbean islands. Children/women ratios for the rural areas are without exception higher than those for the urban.<sup>6/</sup> Again these differentials can be accurately studied from the data for Jamaica. Here a differential between the largely urban Kingston-St. Andrew district and the rest of the island has been evident since 1891. Whereas in 1891 the joint gross reproduction rate for the urban district stood at 1.99, rates for the other parishes of the island ranged from 3.22 to 2.15. This differential, manifest at all later censuses, seems to be closely associated with the trend in fertility after 1921, as demonstrated below.

A further fertility differential, noted at least in the British Caribbean, is a differential according to the three types of family unions recognized at recent censuses: married, common law and keeper unions.<sup>7/</sup> The married shows the highest level, the

<sup>3/</sup> United Nations, Mission to Haiti, Report of the United Nations Mission of Technical Assistance to the Republic of Haiti. (United Nations Publications, Sales No. 1949.II.B2).

<sup>4/</sup> A. Carvalho, "Quelques aspects de la natalité au Brésil", World Population Conference, United Nations Paper E/CONF.13/152, Rome, 1954.

<sup>5/</sup> Lowry Nelson, Rural Cuba (Minneapolis, Minnesota University Press, [1950]).

<sup>6/</sup> P. H. J. Lampe, "A Study on Human Fertility in the British Caribbean Territories", Caribbean Economic Review, vol. III, Nos. 1 and 2 (October, 1951), pp. 93 to 178.

<sup>7/</sup> G. W. Roberts, "Some Aspects of Mating and Fertility in the West Indies", Population Studies, vol. VIII, No. 3 (March, 1955), pp. 199 to 227.

common law the second highest, while the keeper union shows the lowest. In Barbados total fertility rates for mothers are 2.5 for women in keeper unions, 2.6 for those in common law unions and 3.5 for those in legally sanctioned unions. In the Windward Islands the corresponding total fertilities are 3.1, 3.8 and 5.0 respectively. Similar differentials are to be found throughout the non-Indian elements of the populations, and are confirmed by a variety of measures, based both on vital statistics and on census data. It is at present difficult to link these differentials with trends in fertility, but they appear, on close examination, in form and origin so much unlike those usually observed in European populations, that the possibility that a change in mating habits may have unexpected effects on general movements in fertility cannot be ignored.

A fertility differential of considerable importance is that between various racial groups of the populations. These assume particular magnitude, however, only in areas where racial composition is such as to result in large groups of certain racial elements, as for instance in Cuba, Trinidad and British Guiana. Thus in Cuba in 1931 the coloured population showed a children/women ratio of 559, whereas that for native white women was 542.<sup>8/</sup> The differential was even more marked in 1943; for while the fertility ratio for the coloured group remained unchanged, that for the white group was down to 518. But because of the composite nature of the coloured population in Cuba, this differential masks the fact that the mestizo element is increasing much faster than the Negro, and that the latter is indeed increasing at a relatively slower rate than the native white population.

Fertility differentials of a racial origin are most relevant in British Guiana and Trinidad, where in fact they constitute the central theme of fertility trends. The primary fact about the present fertility position in these two territories is the great difference between fertility levels for the East Indian and the non-East Indian sections of their populations. It is first necessary to consider the notable rise in East Indian fertility on which this important differential rests. The types of East Indian immigrants recruited for indenture service during the nineteenth century - adults, mostly males, many of whom were past the prime of childbearing age and unmarried - were not such as would exhibit high fertility patterns in their new environment. Nor did the conditions they encountered in the West Indies encourage high fertility. Plantation life in the nineteenth century was too harsh to give full play to the cultural traits of Indian society making for high fertility. But with the passage of time these conditions improved materially. Conditions of life and work on the plantations were made more humane. Moreover, the increasing proportions of the East Indian population returned as dependent on work outside the sugar plantations and their movement to village

settlements encouraged a more stable family life. Generations born in the West Indies were probably more settled in their environment than their ancestors who came from India. Nor were the social changes experienced of a kind that would erode their cultural characteristics making for high fertility. Christianity had made only slight incursions into their religious life; they continued to be a rural people dependent on agriculture; they did not inter-marry with other elements of the population to any degree, nor did their familial patterns undergo basic changes similar to those experienced by the Negroes under slavery. In fact the East Indian family remains quite distinct from other West Indian types; and this means that the high illegitimacy rates reported for this group derive solely from the inadequacies of prevailing registration laws and have not the same social significance as high illegitimacy rates among the Negro elements of the populations.

As a consequence of these social changes, the East Indians have experienced steady rises in fertility, as can be seen from the joint reproduction rates for British Guiana given in Table 3.

TABLE 3. JOINT GROSS REPRODUCTION RATES FOR BRITISH GUIANA AND TRINIDAD

Year	British Guiana			Trinidad
	East Indian	Other	All races	all races
1891	1.21	2.01	1.65	2.01
1901	-	-	-	2.10
1911	1.61	1.90	1.76	2.07
1921	1.89	1.87	1.88	2.04
1931	2.62	1.85	2.17	1.92
1946	3.14	2.26	2.64	2.63
1951	3.63	2.64	3.09	2.56

Here the gross reproduction rate for this group, which prior to 1921 was much lower than that for the rest of the population, increased steadily and by 1931 was appreciably in excess of the rate for the latter. And in 1946 and 1951 the extremely high rates of 3.1 and 3.6 for the East Indians were greatly in excess of those for the rest of the population. In Trinidad, though the delineation of the East Indian categories is not so accurately drawn in the vital statistics, there is again evidence of a rise in fertility. Manifestly, the rise in British Guiana and Trinidad in recent years derives largely from the performance of their East Indian components. Though the fertility level in Trinidad has within the past 10 years declined somewhat from its very high level of 1946, the phenomenal level of the East Indians in British Guiana, exemplified in a birth rate of 51 and gross reproduction rate of 3.6, continues, and this will for some time to come assure that territory a birth rate in excess of 40.

In other West Indian territories, such as Jamaica where only small numbers of indentured East Indians were introduced, or Barbados which intro-

<sup>8/</sup> Lowry Nelson, *op. cit.*

duced no indentured immigrants, there were no substantial components of potentially high fertility to induce any upward trend. Indeed it is clear that, though there probably was very little change in fertility between the time of the first censuses in 1844 and 1921, the subsequent period has witnessed some small but interesting reductions.

Some decline in Cuba has also been noted by Nelson.<sup>9/</sup> This however is confined to the white population, the children/women ratio for whom declined from 542 in 1931 to 518 in 1943. The ratio for the coloured population remained unchanged, being 559 at both census dates. The declines that have taken place in Barbados and Jamaica can be seen from Table 4. The movements in Jamaica prove of especial interest when examined in conjunction with the fertility differentials between urban and rural districts.

Before 1921 the gross reproduction rates for Jamaica ranged from 2.5 to 2.7, but the evidence of a subsequent decline is unmistakable. Though small, it shows the close association between urbanization and changes in fertility levels. Between 1921 and 1943 birth rates in each successive 5-year period declined steadily, being 36.5 at the opening of the period and 31.8 at the end. Even though in terms of general fertility the year 1921 was at a level almost identical with that shown at previous census years, there were still at this time signs of a growing division of the island into contrasting regions of fertility. For the Kingston-St. Andrew area and the parishes surrounding it the gross reproduction rates was 2.43, ranging from 2.15 to 2.82. On the other hand the gross reproduction rate for the western parishes amounted to 2.94, with a range of from 2.70 to 3.24. By 1943 the rate for the eastern parishes surrounding the capital was down to 1.82, ranging from 1.62 to 2.22. In the western parishes, where rural patterns of high fertility were much less

9/ *Ibid.*

disturbed, the reproduction rate was 2.48, and the range from 2.33 to 2.84. Thus, while the western parishes of comparatively high fertility experienced a reduction of only 16 per cent, the fall in the eastern parishes where fertility was definitely under urban influence was on a larger scale (25 per cent). This suggests that it is to the movements in urban fertility levels that the over-all reduction must be largely ascribed. In fact it can be argued that the diffusion of low fertility patterns outward from the urban centre has induced the declines so far witnessed. This tendency is reinforced by the considerable influx of persons from the rural areas into the suburbs of the capital.

What results have the two somewhat opposing trends in fertility in the British Caribbean had on the general fertility position of these territories? Admittedly, the East Indian performance has markedly forced up fertility in British Guiana, and to a lesser extent in Trinidad. In 1921-25 these two showed a birth-rate of 32.6, which was lower than the corresponding rate for the other colonies; by 1953 the rate had risen to 40.2, largely as a consequence of the situation in British Guiana. On the other hand, though the declines in Jamaica and Barbados do not indicate that substantial declines are imminent, they have still resulted in a small reduction in the birth-rate of the other colonies, from 36.3 in 1921-25 to 35.1 in 1953. For the territories of the British Caribbean as a whole the average number of births increased from 71,800 in 1921-25 to 122,300 in 1953, while the corresponding birth-rates rose slightly from 35.1 to 36.8. However, there have been some minor movements which do not conform to the major trends delineated, in particular a fall in East Indian fertility in Trinidad after 1946, with a consequent reduction in the birth-rate for the whole of that territory. Again there has been a slight post-war rise in some colonies without large East Indian components and which had experienced some small declines during the period 1921-46. All these

TABLE 4. ESTIMATED JOINT REPRODUCTION RATES FOR FIVE WEST INDIAN POPULATIONS

Period	Jamaica		Gross reproduction rates			
	G. R. R. <sup>a/</sup>	N. R. R. <sup>b/</sup>	Trinidad	British Guiana	Barbados	Grenada
1844-61	2.57	-	-	-	-	-
1861-71	2.67	-	-	-	-	-
1871-81	2.55	-	-	-	-	-
1879-83	2.45	1.40	-	1.79	-	3.08
1889-93	2.63	1.46	2.01	1.65	2.39	3.05
1899-1903	-	-	2.10	-	-	2.98
1909-13	2.63	1.55	2.07	1.76	2.66	2.89
1919-23	2.64	1.45	2.04	1.88	2.57	2.76
1929-33	-	-	1.92	2.17	-	-
1941-45	2.08	1.59	2.63 <sup>c/</sup>	2.64 <sup>c/</sup>	2.18 <sup>c/</sup>	2.73 <sup>c/</sup>
1950-52	2.28	1.85	2.56	3.09	2.17	2.96

a/ Gross reproduction rate.

b/ Net reproduction rate.

c/ For 1944-48.

factors emphasize that no sweeping statements about fertility trends can be made at present; here as elsewhere it is evidently unsound to attempt to project into the future movements which at first sight appear to constitute trends in the immediate past. Possibly the study of fertility in terms of measures of the stock type should help to clarify the relation between short-term movements and long-term trends in the fertility of the region; this cannot be done at present.

With the exception of British Guiana, St. Vincent and the Virgin Islands, which show birth-rates in excess of 40, birth-rates range from 33 to 40 throughout the British Caribbean. How do Cuba and Haiti compare with this picture? The children/women ratio for Cuba in 1943 (537) is higher than those for St. Kitts (488), Jamaica (475) and Barbados (422), but lies well within the range for the other territories - 508 to 607. This suggests a birth-rate for Cuba somewhere above 33. But official rates, which fluctuate widely from year to year, are generally well below 30. Another indication that the birth-rate is at least 33 is afforded by considering the population aged 1-4 at 1943 as subject to the Jamaica mortality of 1946. Vital registration is not complete in Haiti. If however we again consider the population aged 1-4 at 1950 as subject to the Jamaica mortalities of 1921 and 1946, it is seen that the birth-rate may be more than 33 and not over 40.

#### NATURAL INCREASE IN THE POPULATIONS

The natural increase resulting from the continued high fertility and rapidly declining mortality in the British Caribbean is shown in Table 5. Both the absolute numbers and the rates of increase have risen steeply between 1921 and 1953. In 1921-25 the total natural increase was 22,000 or about half the population of British Honduras in 1921. By 1953 the natural increase exceeded 84,000, a figure greater than the combined populations of British Honduras and the Virgin Islands in 1953. The rise in natural increase has been most marked in the case of Barbados, because of the considerable falls in infant mortality recorded there; in 1921-25 it was only 300, whereas by 1953 it had grown to 4,300, that is a 13-fold increase

within 30 years. Natural increase has also grown considerably in British Guiana, from 1,200 to 13,600. In 1921-25 the natural increase in Jamaica accounted for about half that of the whole British Caribbean; by 1953 this proportion was much lower (42 per cent).

The rates of natural increase also underline in graphic form the implications of declining mortality and continued high fertility. In 1921-25 rates of increase were well under 1 per cent in Barbados, British Guiana and the Leeward Islands, but due largely to the higher rates experienced in Jamaica the British Caribbean as a whole showed a rate of increase of 1 per cent. In 1953 only one territory, Barbados, had a rate of natural increase under 2 per cent, the rate here being 1.9 per cent. The highest rate - 3.1 per cent - was that of British Guiana, while British Honduras and Trinidad also showed rates above 2.5 per cent. All the territories together showed a rate of increase of 2.5 per cent, more than twice that obtaining 30 years previously.

If we assume that the rate of natural increase in Cuba is approximately the same as that prevailing throughout the British Caribbean in 1953 and that a rate of about 1 per cent obtains in Haiti, the total natural increase in Cuba should be about 145,000, while that for Haiti should be about 32,000. In summary, therefore, the total annual increment to the populations of Cuba, Haiti and the British Caribbean probably amounts to 260,000. This is small by world standards, but its significance for the territories concerned is emphasized by the fact that it nearly equals the populations of the Leeward Islands, Grenada and Dominica combined. Also, if we ignore the sparsely settled mainland territories, British Guiana and British Honduras, an increase of the order estimated for the islands adds about 4 persons to every square mile of land in the islands taken together.

There is every prospect that declines in mortality in the Caribbean will continue, though the prolonged maintenance of the rates of decline achieved during the past 10 extremely favourable years is doubtful. One factor that will tend to slow down the rate of mortality declines is the ageing of the population which the previous conspicuous reductions in mortality will help to stimulate; but

TABLE 5. ANNUAL NATURAL INCREASE

Territory	Annual natural increase		Rates of natural increase	
	1921-25	1953	1921-25	1953
Barbados	300	4,300	2.1	19.5
British Guiana	1,200	13,600	4.1	30.8
British Honduras	600	2,200	13.2	28.8
Jamaica	11,500	35,700	13.0	24.0
Leewards	700	2,800	8.6	23.2
Windwards	3,300	7,300	16.5	24.6
Trinidad	4,300	18,300	11.4	27.0
Total	21,900	84,200	10.8	25.3

this is unlikely to prove of great importance unless some appreciable declines in fertility develop as well. Still, the convergence of all territories of the British Caribbean towards a death rate of about 9 within a few years seems certain. It is less easy to assess the future course of fertility. A number of factors will combine to influence future fertility levels. Probably the strongest factor making for a reduction is the progressive urbanization which is one of the arresting features of West Indian populations today, and which rising densities promise to stimulate still further. Nor is it improbable that efforts may be made, by official or private bodies, to promote the spread of measures of fertility control, and this may definitely induce a downward trend in fertility. In

what way, if any, changes in mating frequencies and habits will affect the course of fertility is difficult to assess, though it is possible that a greater spread of unions of the formally married type may tend to offset the tendency to decline promised by urbanization and the spread of measures of fertility control in general. As the small declines witnessed in certain territories give no indication of imminent large-scale declines it seems safe to assume that the high levels of fertility now prevailing will continue for some time to come. The continuance of a birth rate of 37 and a death rate of 9 will result in a rate of natural increase of at least 2.8 per cent, which in the absence of any emigration outlets suggests a doubling of the population within 25 years.

## ANALYSIS AND CALCULATION OF THE FERTILITY OF POPULATIONS OF UNDER-DEVELOPED COUNTRIES

by L. Henry

Paper prepared for the seminar on population problems in Latin America

Most, if not all, populations of under-developed countries already enjoy the benefit of advances in medical knowledge, with the result that their mortality rates have shown a substantial decline, which is expected to continue and even to increase, at least in the near future.

The birth-rate of these populations remains high and their rate of growth, which is already higher than that of the populations of Europe during the last century, is tending to increase in proportion to the decline in the death-rate.

The solution of the problems raised by this population growth depends to a great extent on the duration of the period of growth. As collective and individual efforts will constantly be made to extend the length of human life, the duration of the period of growth primarily depends on the future trend of the birth-rate.

This is governed by so many factors that, even if the birth-rates of the under-developed countries were precisely known, which is often far from the case, such knowledge would, in itself be of only limited value. In order to form a reasonably accurate opinion as to whether the birth-rate is likely to increase, remain stationary, or decline, it is necessary to determine what changes are likely to take place in the various factors by which it is governed. Hence the need for analysis, and by the same token, measurement, both of which are essential.

### CHARACTERISTICS OF POPULATIONS OF UNDER-DEVELOPED COUNTRIES

The very high birth-rate typical of under-developed countries is associated with other characteristics, such as an inadequate level of education and a primitive or agrarian type of economy, which distinguish their populations from those of the more advanced countries and liken them to the populations of Europe in the past.

But this is not the complete picture. Although all populations with high birth-rates have characteristics in common which distinguish them from the present-day populations of Europe, the populations of Europe in the past had characteristics not shared by the populations of under-developed countries; there are also characteristics which have survived changes in ways of life and are common to the populations of Europe, both past and present.

A characteristic common to populations with high birth-rates is the absence or restricted practice of family limitation. However, this common attitude of non-interference forms part of a whole body of taboos, rules and customs which in various ways serve to regulate and limit reproduction. Thus, although family limitation in the modern sense of the term is not practised, the fertility and birth-rates of these populations are lower, and considerably lower, than the physiological maximum.

It also follows that the further a population is removed from this maximum as a result of its habits and customs, the greater is the possibility that any changes in these habits and customs under the influence of another civilization may tend to increase its fertility and birth-rate or to offset, or at least to reduce, the effects of the factors operating to bring about a decline that usually accompany such changes. Thus, any westernization of the way of life of the populations of countries at present under-developed may be accompanied by changes in customs conducive to a rise in fertility and at the same time by changes in outlook and behaviour patterns conducive to a decline.

This possibility must be borne in mind, particularly in view of the fact that the social structure, family relationships and the marriage customs of the populations of the under-developed countries of today are often very different from those which prevailed in pre-industrial Europe and which still exist, at least to some extent, in contemporary Europe. To take an example, the populations of European countries have practised and still practise monogamy, and the majority of unions are stable. In some populations of under-developed countries, however, unions are frequently unstable.

On the other hand, according to F. Lorimer, the family consisting only of parents and children, which is the predominant form in Western society, is one of the distinguishing features of that society; as a correlative, the individual's attachments to a line or extended family are weak and the parents are thus left to bear full economic and moral responsibility for their children.<sup>1/</sup> Such a

<sup>1/</sup> F. Lorimer, *Culture and Human Fertility* (Paris, United Nations Educational, Scientific and Cultural Organization, 1955).

situation provides reasons for family limitation and facilitates their expression. Conversely, systems of family relationships under which the individual has strong attachments to a group, line, clan, tribe or extended family and can rely on the assistance of that group, provide few reasons for family limitation.

In the event of transition from a situation in which the individual has strong attachments to a group, and in which unions are frequently unstable, to a situation in which attachments are weak and unions highly stable, fertility will tend to increase under the influence of stability and to decline in consequence of the weakening of the bonds between the individual and the group. This, of course, assumes that in the first situation the instability of unions tends, as appears probable, to maintain fertility at a fairly low level. The fact that it operates in that direction has, however, to be proved. Hence the need to study the fertility of those women in the population of the under-developed country under consideration whose unions have been stable and compare it with that of women whose unions have been unstable.

#### TOTAL FERTILITY OR LEGITIMATE FERTILITY

This example, chosen intentionally, brings us to the heart of the problem. Which fertility should be studied - the fertility of all women, or the fertility of women whose marriages are relatively stable? The latter fertility may be referred to as legitimate because it roughly corresponds to the fertility of legal unions in countries where this type of union is predominant.

In countries where marriage customs differ most widely from those of the West, more attention seems to have been paid to total fertility than to legitimate fertility. No doubt one reason for this preference is the fact that a knowledge of the fertility rates and the age structure of the population makes it possible to estimate the birth-rate, which cannot be calculated directly on account of the unreliable registration of births. However, as we have already pointed out, a knowledge of the birth-rate is not enough.

Another reason which has been advanced in support of the choice of total fertility is that in these populations, women are exposed to the risk of conception throughout the child-bearing period, whatever their marital status. If that were so, the total fertility of these populations should be identical with the legitimate fertility of populations in which the permanent risk of conception exists only during marriage. As that is not the case, it seems that marriage customs, whatever they may be, exert an important influence.

Total fertility is the combined result of habits and marriage customs and illegitimate and legitimate fertility, so that it is impossible to determine whether high fertility at, say, around 20 years of age, is due to early marriage and high legitimate fertility or to a large measure of sexual licence

before marriage; nor is it possible to determine whether low fertility at around 35 years of age is due to a high proportion of widows who have not remarried, to the desertion of older women by polygamous husbands, to a rapid increase in physiological sterility with advancing age, or to the adoption of the practice of family limitation.

In the present writer's opinion, an attempt must be made to determine legitimate fertility in all cases.

There is another technical reason that must be added to those listed above. Owing to errors in regard to the age of women, it is easier to make an accurate estimate of the legitimate fertility of women between 25 and 30 years of age than of total fertility between the same ages.

Important as it is, this fertility is only one of the factors in the analysis of a given situation. The others must not be overlooked.

In the case of Western populations, the study of legitimate fertility is linked with the study of nuptiality. The latter study is largely quantitative, as Western marriage customs are assumed to be well known. In the case of the population of an under-developed country, attention must also be paid to the qualitative aspect. Any attempt to determine the proportion of married women in each age group, the incidence of polygamy, and so forth, must be preceded by a thorough investigation of the habits and marriage customs of the population in question. In other words, any study of the fertility of the population of an under-developed country must be combined with a sociological survey, in the absence of which it is difficult to interpret results.

The following is a brief list of the main points to be covered:

The social structure and the system of family relationships of the population in question;

Sexual ethics: the behaviour of unmarried women, married women and divorcees;

The population's attitude towards extra-nuptial conception;

Type of unions: civil, religious or consensual;

Continuity of unions: the frequency of temporary separations may vary according to the way of life;

Stability of unions: in the case of unstable unions, attention should be paid to the intervals between successive unions;

Form of union: polygamy and monogamy. In the case of polygamy, it is very important to know the customs regulating relations between the husband and his wives: is the husband required to have intercourse with all his wives, or are his older wives deserted in favour of his younger wives? The same problem exists concerning a wife and concubines. In some populations a man inherits the wife of a deceased relative. It is necessary to determine whether or not an inherited wife should be regarded as a spouse, particularly where she is still of reproductive age but no longer very young.

Lastly, particular attention should be paid to taboos on sexual intercourse after confinement and, where applicable, during the period of lactation. It

is not enough to indicate, as is all too frequently done, that marital relations cease during the period of lactation. It is also necessary to know how the rule is observed in practice and whether there is any difference between monogamists and polygamists in this respect. To take an example, a certain tribe of Equatorial Africa observes a taboo during the period of lactation, which lasts two to three years. The conclusion that would be drawn from such a statement would be that the taboo lasts for two to three years. In point of fact, the period of abstinence lasts until the child begins to walk; its interpretation is fairly elastic and monogamous spouses tend to resume marital relations as soon as the child is able to crawl.

Regardless of the existence of sexual taboos, the length of the period of lactation should always be indicated.

The above points having been made clear, it is next necessary to consider how legitimate fertility can be measured. A few conclusions relating to this fertility will first be set out. Drawn from both theory and observations, they will serve as a reliable guide and will call attention to the misleading results which may, unfortunately, be obtained owing to the manifold difficulties encountered in the demographic study of populations of underdeveloped countries.

#### BASIC CONCLUSIONS RELATING TO LEGITIMATE FERTILITY

Legitimate fertility, although a more simple concept than total fertility, is nevertheless influenced by many factors.

##### Pre-Malthusian phase <sup>2/</sup>

Let us consider a married woman at a given moment in her married life (for the sake of convenience we take the married woman as an example, it being understood that her reproductive capacity is that of the couple, of which she merely represents one element); she may be capable of conceiving at that time or, on the contrary, be temporarily or permanently sterile.

Even if the woman is capable of conceiving there is no certainty that she will do so during a given menstrual cycle; impregnation is an uncertain phenomenon and for any given married woman there is only one probability of conceiving during each menstrual cycle or, more generally speaking, during each unit of time. This probability is called fecundability.

Temporary sterility may be the result of a previous conception; pregnant women are not

<sup>2/</sup> The term "pre-Malthusian" is used here to denote a phase at which there is no deliberate effort on the part of the individual to restrict the number of children to those already born, this number being considered to be the most desirable or the acceptable maximum. A general reduction in the size of families due to taboos on sexual intercourse during the period of lactation and even to deferred marriages may, however, take place in a pre-Malthusian phase without affecting its character.

exposed to the risk of conception. The same applies to nursing mothers either as a result of lactation itself or because the risk of conception is eliminated by a taboo on sexual intercourse.

The duration of this temporary sterility depends on the duration of pregnancy (in practice, variations in the duration of pregnancy are ignored, as only live births are taken into account<sup>3/</sup>) and the duration of the period of lactation or the sexual taboo; it is shortest when the child dies at birth (provided that the mother does not act as a wet-nurse to another child); observation shows, moreover, that the interval between births is markedly shorter when the previous child dies under rather than over one year of age, and that the sooner the child dies after birth the shorter the interval.

Temporary sterility may also be the result of illness or separation, in which case its only effect is to reduce fecundability. It is merely one of the factors influencing the probability of conception; another factor is obviously the frequency of sexual intercourse.

Lastly, there is a temporary sterility which occurs among very young women (sterility of adolescent girls) even among those who have reached the age of puberty; this is due to a normal delay in the development of reproductive capacity or nubility after the onset of menstruation. Of varying duration, this temporary sterility ceases, except in rare cases, before twenty years of age.

Complete sterility may be due to various causes - including malformation, venereal disease, puerperal infection and so forth. It may originate with the husband, the wife or the couple. Its incidence increases with the age of the woman, becoming almost complete at about fifty years of age and perhaps even earlier in the case of some populations.

Every married woman is therefore destined to become sterile; some are sterile from the time of their marriage, others become sterile before they can give birth to a child. The proportion of women who remain childless for this reason is usually higher among those who marry late in life than those who marry early.

The following are some results of observations.

In the case of women marrying at about twenty years of age (and fortiori at under twenty years of age), the proportion remaining childless throughout a long union is usually under 5 per cent; this proportion rises with the age at marriage, at first slowly, then rapidly owing to the more rapid advance of sterility with age and to the reduction of the remaining childbearing period.

In families of the same size, the average interval between live births varies little from the first to the antepenultimate or even the penultimate; however, on the average the last interval is always longer than the preceding intervals.

<sup>3/</sup> The effects of stillbirths and spontaneous abortions are considered as a decline in fecundability, and the probability of giving birth to live children is substituted for the probability of conception.



The length of the intervals between births depends on fecundability and on the duration of the temporary sterility associated with each birth (pregnancy plus sterility after confinement). Fecundability and the duration of this temporary sterility therefore vary little in the period during which births other than the last births take place. Accordingly, they can be regarded as independent of the length of the marriage, the number of children already born and the age of the wife, provided that it is between twenty and thirty-five or forty. After the age of thirty-five or forty, at least one of the parameters varies according to age; there is no reason to believe that the duration of sterility associated with births increases; on the other hand, fecundability must decline owing to the irregular ovulation which frequently precedes the menopause; moreover, the proportion of conceptions leading to live births declines, the frequency of spontaneous abortions and still births increasing more rapidly with the woman's age than in the case of women under thirty-five.

Owing to the duration of pregnancy and of temporary sterility following confinement, legitimate fertility rates calculated over a short period (a month, for example) fluctuate in the early stages of marriages. These fluctuations gradually disappear and after a few years (about five) the fertility rate of fertile couples becomes stable. In the case of young women who have been married only a short time, the effect of the initial fluctuations, coupled with the effect of the distribution of these women by length of marriage, may be to produce an apparent peak in the legitimate fertility rate calculated by individual years of age. This peak does not mean that reproductive capacity itself also reaches a peak at that age. It is therefore pointless to calculate fertility rates by individual years of age in the case of women under twenty-five or thirty years of age. Calculations by age groups of five years is enough.

Owing to the sterility of adolescent girls, the fertility rate of women under 20 years is normally lower than that of women of 20-24 years. The value varies, however, from population to population according to the age distribution of married women in this age group.

There is little variation between the legitimate fertility rates of women aged 20-24, 25-29 and 30-34 years who have children after 25, 30 and 35 years respectively (whether or not they have had children before); the rates then fall, especially between 35-39 and 40-44 years. The common value of the first three rates (which, roughly speaking, are those of fertile women under 35 years) is very little different from the reciprocal of the average interval between all births in unions which have lasted a sufficient length of time.

At 20-24 years, the legitimate fertility rates (of married women as a whole) are only slightly lower than the above if permanent sterility is low at these ages (which is usually the case).

The variation becomes greater with age, as the percentage of women becoming sterile increases; a graph of fertility rates from 20-24 to 45-49 years forms a smooth line becoming markedly convex towards the peak. After the 20-24 years age group these fertility rates are largely independent of the duration of marriage and, therefore, of the age at marriage. This factor may be disregarded (except, however, in the case of women married too young whose health may have been affected by premature childbearing), and the woman's age may be considered to have a preponderant influence on fertility.

Here follow, for some populations practising little or no birth control, fertility rate indices from 25-29 to 45-49 years, the rate for the group 20-24 years being taken as the base, equal to 100.

There are certainly some variations, probably due to the uneven onset of permanent sterility with increasing age; however, there is sufficient similarity of movement largely to exclude the possibility of widely different results in a pre-Malthusian phase. Where discrepancies are present, therefore, errors must be suspected.

#### Transitional phase

A transitional phase is one in which a start has been made with the practice of birth control, with already perceptible effects. Such a phase may well be found to exist, now or in the near future, either throughout the population of an under-developed country or in certain sectors of such a population (higher social classes, urban population).

	<u>20-24</u> <u>years</u>	<u>25-29</u> <u>years</u>	<u>30-34</u> <u>years</u>	<u>35-39</u> <u>years</u>	<u>40-44</u> <u>years</u>	<u>45-49</u> <u>years</u>
Citizenry of Geneva (late 16th to early 17th century)	100	93	84	71	32	5
French Canada (early 18th century)	100	97	95	81	45	6
Norway (about 1875)	100	96	86	73	45	10
Hutterites <sup>a/</sup> (marriages before 1921)	100	95	89	79	43	6
Japan (about 1925)	100	88	75	58	26	5
Rural Iran (1950 inquiry)	100	94	82	64	33	5

<sup>a/</sup> Anabaptist sect in the United States and Canada not practising family limitation.

In a society practising birth control, the number of children already born becomes a basic factor in determining a couple's behaviour: depending on whether or not this number is smaller than the number of children considered desirable or the largest number considered acceptable, the couple will not or will try to be infertile in the future. At an advanced level, voluntary control will be exercised in relation not only to the number of children, but also to the spacing, and even the date, of births.

In the transitional phase, the desire to reduce the number is probably the dominant factor, particularly if births were already sufficiently widely spaced in the original pre-Malthusian phase. At the beginning of the marriage, the reproductive process will still resemble that prevailing in the pre-Malthusian phase. If family limitation proceeds successfully, this reproductive process will be abruptly discontinued; if birth control is not practised successfully, it will continue, but the additional unwanted births will, as a rule, occur at far wider intervals than before.

Hence, married women aged about 20 years will, up to the age of say 30 years, have a fertility close to that of the pre-Malthusian phase, while women over 30 will have a much lower fertility. The graph of legitimate fertility according to age will form a line which, for a large part of its course, will show a marked upward concavity.

By way of illustration, we give below two series of indices for the same population a century apart.

A large proportion of the women covered by these series were married before the age of 20; the decrease appears as early as the group 25-29 years of age and becomes very marked from the age of 30 years onwards.

#### DIFFICULTY OF MEASUREMENT

At first sight the difficulties of measuring the fertility of the populations of under-developed countries would seem to be due mainly to the lack or inadequacy of birth registration or census arrangements. This, however, is not the real source of the difficulties; it is perfectly possible to study the fertility of a population with no system of birth registration by means of inquiries or censuses, while the fertility of a population not covered by censuses may be studied on the basis of well-kept civil registers.

The difficulties are in fact bound up with the cultural level of these populations. Frequently they have only the vaguest sense of time; they may conceal the facts out of superstition or mistrust; and they are probably more liable than others to make unintentional omissions. In our view, however,

the last-mentioned hazard is of minor importance compared with the other two; a woman has less difficulty in remembering how many children she has borne than in remembering when they were born; and it is easier for her to state how many times she has been married and whether her husband had other wives at the same time than to indicate when each successive union began and ended.

As the date of events plays an extremely important part in the measurement of legitimate fertility, particular emphasis is here given to this point. The effect of mistakes in recalling the number of events must not, however, be disregarded. In the case of omissions, some cross-checking is possible. Where there is any danger of the deliberate concealment of facts, for example, a result of known superstition, the difficulties can probably be overcome only by means of continuous observation by persons (officials, ethnographers, sociologists and the like) who live on the spot and are well acquainted with the people.

#### Age of women

It is necessary to know the age of the women studied. Very often, however, women have so little idea of their own age that their replies are quite unreliable. In such cases, the investigator or census enumerator has to estimate their age.

It used to be thought that this could be done on the basis of physical appearance or development criteria. These methods, however, are liable to result in serious systematic errors, to avoid which there would have to be a possibility of making a comparison with persons of known age belonging to the same population and living under the same conditions. As a rule the persons of known age in a population of the type under consideration are the most advanced and, by that token, may have a physical development quite different from that of the bulk of the population.

Furthermore, care must be taken to keep questions of fertility quite clear of any association, conscious or unconscious, with physical criteria. Failure to do so may result in the following systematic errors:

- (a) the age of young women who are already mothers may be estimated as higher than that of those who have not yet had children;
- (b) the age of the most fertile women may be estimated as higher than that of women with fewer children;
- (c) the age of all women past the menopause, or who have had no children for a long period, may be estimated as over 45 years.

These errors, which have been committed in several inquiries, seriously distort the results.

	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
Citizenry (late 16th to early of 17th century)	100	93	84	71	32	5
Geneva (early 18th century)	100	81	49	26	7	1

Another method is to fix the date of a woman's birth by reference to local events of known date. This is a better method than the foregoing; its accuracy may vary, but there is less risk of systematic error.

In some more advanced populations, the ages reported by women, while often approximate, are close to the truth. Errors still persist, however, owing to the predilection for round figures and the tendency to subtract a few years. Hence, when a limited inquiry is being made it would be advisable to check the woman's year of birth from any written documents available (birth certificates, baptismal certificates, etc.).

Any group of women of apparent age  $a$  will invariably include some women whose real age is different from  $a$ . The true mean age of the group may be very close to  $a$  or may differ from it (systematic errors due, for example, to the subtraction of years).

Even in the former case there is a risk of considerable error in estimating the fertility rate at age  $a$ , if this does not equal the average of the rates for the real ages of the women of apparent age  $a$ . If the span of the real ages in group  $a$  is wide, these errors will throw the measurement of general fertility completely out. The graph of general fertility according to age forms a bell-shaped curve, no appreciable sector of which is linear. Errors in estimating age of the kind just discussed have the effect of substituting for each point the mean (weighted or non-weighted) of a number of straddled points, thus flattening the curve and, at the peak, shifting it to the right. This distortion might explain the fact that general fertility rates reach an apparent peak between 25 and 30 years in populations where, as a result of very early nuptiality, the peak should fall between 20 and 25 years.

Since, on the other hand, the graph of legitimate fertility in terms of age is roughly linear between 20 and 30 years, the legitimate fertility rates of married women of apparent age 25 years should deviate little from the real rate, and the rate for the group of apparent age 25-29 years should deviate little from that of the group whose real age is 25-29 years. Beyond that point the apparent fall in legitimate fertility will at first be greater than the true fall but will, on the other hand, be lower in the extreme age groups.

#### Dates relating to unions

The more unions there have been, the more difficult it will be to obtain information on this point. Where there has been only one union, the investigator can eliminate one difficulty by concentrating on those women whose first union is still in existence. This necessitates foregoing a study of the effects of the dissolution of the first union on other women by comparing average numbers of children.

The difficulty of determining the starting date of unions will vary with the population studied. An attempt may be made, and has been made, to

substitute the date of birth of the first child or the age of the woman at the birth of the first child; in this case, the frequency of total infertility (women who, though they have been married, have remained childless) must be taken into account.

In the absence of other data, the date of birth of the first child may be estimated from the age of the surviving children.

#### Age of surviving children

The possible methods are the same as those described for women. Physical criteria are not recommended; their use often leads to considerable discrepancies between sexes about the age of puberty. It is better to rely on local calendars and whatever documents are available. If the age of surviving children is known, the approximate year of their birth can be determined and the year of birth of deceased children can be estimated where the relation of their birth dates to those of the surviving children can be ascertained. In such cases the births of the surviving children serve as the family calendar.

### METHODS OF MEASUREMENT

In all countries where reliable statistics are available, fertility rates are normally obtained by dividing the total number of women in a given category (e.g. married women aged 25-29 years) by the annual number of births in that category, the number of births being given in the statistics on population movement and the total number of women being estimated from the most recent census figures.

In countries where the registration of births is incomplete, this method cannot be used. All studies of fertility must be based on census or special inquiries. This reliance on a single source of information should not, however, be regarded as a last resort; it is used in countries where reliable statistics are available when there is no guarantee that the information (e.g. as to social and economic category) given to the civil registry and the census enumerator will tally. It is also better adapted to a study of trends and will probably be increasingly widely used in view of the growing importance of cohort analysis. This type of analysis is the most suitable for under-developed countries, where for the time being short-term trends are of much less interest than long-term trends.

Ideally, this method is applied as follows: each woman is asked the dates of her birth, her marriage or marriages,<sup>4/</sup> of the dissolution of each union (if applicable) and of the births of her children. She is also asked questions on social background, educational level, husband's occupation, etc.

In its simplest form the questionnaire covers only the woman's age and the total number of children born to her. In such cases, which are frequent in Africa, thought has been given to

<sup>4/</sup> The term "marriage" is used to mean the contraction of a union, whether legal, religious or consensual.

various methods of determining either total fertility alone or fertility rates at different ages. The tendency is, however, to ask for information regarding the number of births in the past twelve months in addition to the total number of children born, thus making up for the lack of civil registration. The choice of the one-year period is based on consideration of convenience and, even more, of accuracy in replies in cases where the population is unable to place an event unless it occurred in the preceding year. This choice has, however, two disadvantages:

- (1) it restricts observation to a very short period;
- (2) it means that a large number of women must be questioned for a given error in sampling.

Suppose, for example, that we are to measure a legitimate fertility rate at 25-29 years of 0.400 (the order of magnitude of this rate among European populations in the past). In order to ensure that the rate given by the sample does not vary by more than 0.010 (in either direction) in 95 per cent of cases, 10,000 married women aged 25-29 years must be questioned if the rate is calculated on the basis of legitimate births in the preceding year. The same degree of accuracy is obtained by calculating this rate on the basis of legitimate births in the preceding five years from a sample of 1,600 women aged 30 years who have been married for at least five years.<sup>5/</sup>

If the investigator is prepared to accept half this degree of accuracy, which is still sufficient, the number of women can be reduced to 2,500 in the former case and 400 in the latter. These figures must be multiplied by the number of age groups to be studied if the inquiry is limited to births in the past five years. If, however, the dates of birth of all the children of a woman or of a marriage can be ascertained, a sample of 400 women aged between 45 and 50 years, who were married before reaching the age of 20 and whose union is still in being, will provide with sufficient accuracy the legitimate fertility rates in all age groups except the first (under 20 years).

In practice, errors in replies are a greater hazard than errors of sampling. It is true that the latter increase with the reduction in the size of the sample, but the reduction in the number of women questioned makes it possible to give more time to each and thus reduce errors in replies. It is then possible to reconstruct each woman's history in more detail.

In the last analysis, detailed inquiries covering small samples seem better suited to the measurement of the fertility of the populations of underdeveloped countries than extensive inquiries of, *a fortiori*, censuses.

Such inquiries must be adapted to the degree of development of the population, but despite the difficulties every effort should be made to re-

construct the family over the longest possible period of years.

The most advanced sections of the population will always provide the most favourable material. Knowledge of their fertility is of great interest; it should provide an answer to the frequently raised question of changes in the behaviour patterns of these sections. If they have already reached the transitional phase, the complete reconstruction (which is often possible in an advanced environment) of the history of about 500 women over the age of 30 or 35 years should produce a definite answer on this point. In order to estimate the legitimate fertility rate in each age group, the number of years of marriage in each age group and the number of live births during those years are determined for each woman. The rate is obtained by dividing total births by total years.

Where the complete history cannot be reconstructed (which is the case in the less advanced categories), the reconstruction of the history of married women must be limited to the recent past (one or a few years). The difficulty will be to fix an absolutely clear-cut starting point for this period; a notable event in the local calendar, where there is one, can be used for this purpose. In such a case a woman who is unable to say how long she has been married will probably know whether her union began before or after the landmark event. If it began before that event, the duration of marriage can be taken to be the period which has elapsed since the event; it should be calculated in years and tenths of years, as rounding off the figure to the nearest year makes the relative error too great.

It remains to determine the dates of birth of children born since the landmark event. This must be done on the basis of the age of the children, calculated from the local calendar or, in the case of deceased children, the family calendar consisting of the years of birth of the other children.

From the woman's present age and duration of marriage we now turn to the number of years of life in the age groups to which the woman has belonged since the landmark event. From the present age of the children we can calculate the woman's age at the birth of each child. Thus we return to the same calculation as in the most favourable case.

Such an attempt to determine legitimate fertility on the basis of births in a period of known length does not, of course, remove the necessity of collecting and making the best use of data on events before the beginning of that period.

Lastly, inquiries must be so organized that results can be cross-checked. If the local calendar is such that the recent past can be divided into two periods of sufficiently precise length, it will be worth while to attempt the reconstruction of each woman's history during each of these periods and to compare, age group by age group, the results for each period; this will give an idea of the error involved in research into the past.

<sup>5/</sup> According to the distribution of the number of births in five years of married life (Geneva, late sixteenth and early seventeenth century).

The investigator should always ask the sex of the children; random errors apart, there should normally be about 105 boys to every 100 girls. The figures arrived at sometimes differ considerably from this standard; such a divergence points to omissions, the frequency of which will depend on the child's sex or survival. If it depends on the former, there will be too many boys, but if on the latter, there will be too few, owing to the higher mortality of boys.

It may happen, however, that deceased children are omitted and, at the same time, girls are forgotten more often than boys; in this case, through the interplay of compensating factors, the results may show an apparently normal masculinity even in the presence of many omissions. Hence it is useful to make a preliminary study of the population's attitude to boys and girls respectively and to ascertain whether there is any disinclination to recall deceased children.

In some populations, total sterility seems to be of frequent occurrence, but there will sometimes be a suspicion that this is only apparent, and due to a large number of omissions. Hence when a woman says that she has had no children an effort must be made to check her statements from other sources.

It is very important to know the real frequency of total sterility. If this is widespread, it may be possible to increase the fertility of the population suffering from it by improving their standard of health.

Despite every effort and every precaution there will still be some cases where any reconstruction of the past must be problematical. The investigator will then have to consider resorting to current surveys, where a sample of women is kept under study for one or more years and events are recorded as they take place.

## CURRENT ITEMS

### REGIONAL CENTRES FOR DEMOGRAPHIC RESEARCH AND TRAINING

Considerable progress has been made toward the establishment of regional centres for demographic research and training in under-developed regions of the world, in compliance with a resolution of the Economic and Social Council.

In May 1956 the Government of Chile offered to act as host to a Latin American Centre and formally submitted a request for Technical Assistance to this end. At its fifth session, the Committee of the Whole of the Economic Commission for Latin America endorsed the plans of the Secretariat and adopted a resolution for submission to the Economic and Social Council welcoming the establishment of a Regional Centre. A grant of \$45,000 for the operation of the Centre for the 1956-1957 period has been made by the Population Council, Inc. It is hoped that the Centre will be able to begin functioning by the end of 1956.

In July 1956 the Government of India requested the co-operation of the United Nations in establishing a Centre for Demographic Research and Training at Bombay, India, which would serve regional as well as national purposes. It is hoped to establish a Regional Centre for Asia and the Far East by the middle of 1957.

The regional centres are intended as a practical form of international co-operation to further the development of demographic studies of common interest to countries in the regions concerned, and to help overcome the present shortages of personnel trained in demographic analysis in Latin America and the Far East. While considerable progress has been made in these regions during recent years in the development of demographic statistics, much less has been done to use these statistics in studies of the trends and characteristics of population, their relations with economic and social factors, and practical implications for development programmes. The activities of the regional centres will include both training in the use of demographic statistics for such purposes and the carrying out of research on demographic questions of common regional interest. It is hoped that a programme of this kind will help avoid duplication of effort and ensure effective utilization of the available personnel and other resources for the common benefit of all countries in the region.

### POPULATION COMMISSION NINTH SESSION

Egypt, Israel and Norway have been elected by the Economic and Social Council to terms of membership in the Population Commission and are among the members who will attend at the ninth

session of that body, to be held early in 1957. These new members replace Iran, Sweden and Syria, who were represented at the eighth session of the Commission and whose terms have expired. Other members to be represented at the ninth session include: Argentina, Belgium, Brazil, Canada, China, Costa Rica, France, India, the Ukrainian Soviet Socialist Republic, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

### SEMINAR ON URBANIZATION IN THE ECAFE REGION

A seminar on urbanization in Asia and the Far East will be held in Bangkok, Thailand, from 8 to 18 August 1956.

The seminar is sponsored jointly by the United Nations and the United Nations Educational, Scientific and Cultural Organization, in co-operation with the International Labour Office (ILO). By providing a forum for discussion between specialists and policy makers, the seminar is intended to create an awareness in administrative as well as research circles of the social and economic problems associated with urbanization, and to stimulate progress toward their solution.

Twenty-one Governments in the region have been invited to send specialists to participate in the seminar. Social scientists and other experts sponsored by the United Nations, UNESCO, the ILO and other specialized agencies, as well as members of other agencies and non-governmental organizations, will also attend the seminar.

Philip M. Hauser, Professor of Sociology and Director of the Population Research and Training Centre, University of Chicago, United States, will act as general rapporteur.

### SEMINARS ON POPULATION PROBLEMS

During the latter part of 1955 the United Nations organized two seminars on population problems in two of the less-developed regions of the world. The first was held at Bandung, Indonesia, from 21 November to 3 December at the invitation of the Government of Indonesia, and the second at Rio de Janeiro, Brazil, from 5-16 December at the invitation of the Government of Brazil, the Instituto Brasileiro de Geografia e Estatística, and the Fundação Getúlio Vargas.

The Seminars provided opportunities for an exchange of information and points of view among the government officials and other technically qualified persons who attended — for the most part persons concerned with various aspects of their countries' social and economic development

programmes. Demography, economic planning, census and vital statistics, public health, housing, agricultural economics and social welfare were among the fields from which participants were drawn.

The meetings at both Seminars were devoted to a discussion of topics on the agenda rather than to the reading of formal papers. These topics were grouped under four main headings: (1) Demographic situation in the region and prospects for future population trends; (2) Relation of population trends to problems of planning for economic and social development; (3) Needed demographic research; and (4) Organization of demographic research and training.

A total of 11 Governments, including Burma, Ceylon, India, Indonesia, Japan, Laos, Pakistan, the Philippines, Singapore, Thailand, and Viet-Nam, were represented at the Bandung Seminar, either by official government representatives or by individuals who were awarded fellowships for attendance. A total of 37 persons in these categories attended. At the Seminar in Rio de Janeiro, 20 countries in the region had one or both of the above types of representation; they included: Argentina, Bolivia, Brazil, British West Indies, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Haiti, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Trinidad, Uruguay, and the Virgin Islands.

The United Nations appointed as Director of the Bandung Seminar Mr. Pascal K. Whelpton, Director of the Scripps Foundation for Research in Population Problems, Miami University, Oxford, Ohio, United States. Assisting him were Mr. Halvor Gille of the Population Branch of the United Nations, as Administrative Officer, and Mr. S. S. Palenkahu of the Ministry of Social Affairs of the Government of Indonesia, who served as liaison officer. Professor Giorgio Mortara of the Instituto Brasileiro de Geografia e Estatística was Director and Mr. Jean Bourgeois-Pichat, Co-Director, of the Seminar in Latin America.

The International Social Science Council provided financial assistance for both Seminars in the form of fellowships for attendance, the preparation of study materials, and the recruitment of expert discussion leaders.

A report on the Seminar in Asia and the Far East containing the "Summary and Conclusions" of the meetings was submitted to the twelfth session of the Economic Commission for Asia and the Far East,<sup>1/</sup> and an abridgement of the "Summary and Conclusions" has been published in the Economic Bulletin for Asia and the Far East.<sup>2/</sup> The United Nations will shortly issue final reports on the two Seminars, which will summarize the discussions at the substantive meetings.

✓ 1/ Economic Commission for Asia and the Far East, Report of the United Nations Seminar on Population in Asia and the Far East, E/CN.11/415, Bangkok, 1956.

✓ 2/ "Seminar on Population", Economic Bulletin for Asia and the Far East, vol. VII, No. 1 (May, 1956), pp. 32 to 35.

Selected working papers from the Seminars are published in this issue of the Population Bulletin. Another working paper from the Bandung Seminar, prepared by the United Nations Food and Agriculture Organization, has been published in the Economic Bulletin for Asia and the Far East.<sup>3/</sup>

#### NEW UNITED NATIONS PUBLICATIONS RELATING TO POPULATION

The following United Nations studies in the field of population have either recently been published or are in the press:

Analytical Bibliography of International Migration Statistics, Selected Countries, 1925-1950, ST/ SOA/Ser.A., Population Studies, No. 24 (United Nations Publications, Sales No. 1956.VIII.1.) This volume is an analytical bibliography of the primary sources of international migration statistics, 1925-1950, for twenty-four selected countries. It also contains a comprehensive cross index of subject matter on international migration for the years and countries covered. The countries included were selected with a view to facilitating studies of emigration from Europe.

Methods of Appraisal of Quality of Basic Data for Population Estimates, (Manual on methods of estimating population, No. II.) ST/SOA/Ser.A, Population Studies, No. 23 (United Nations Publications, Sales No. 1956.XIII.2.) This is the second of a series of manuals on methods of estimating population. It describes certain methods for appraising the accuracy of those types of statistics which are most commonly used as a basis for current population estimates and future population projections, namely, census figures on total population and on age groups, registration statistics of births and deaths, and statistics of migration.

Age and Sex Patterns of Mortality. Model Life Tables for Under-Developed Countries, ST/SOA/Ser.A, Population Studies, No. 22 (United Nations Publications, Sales No. 1955.XIII.9.) This population contains forty model life tables constructed to cover the entire range of mortality variations in the world today. These life tables represent the typical patterns of changes in mortality rates in different age groups during the transition from high to low mortality levels. Their purpose is chiefly to facilitate mortality estimates for countries and regions of the world in which no adequate mortality statistics have so far been developed.

Methods for Population Projections by Sex and Age, (Manual on methods of estimating population, No. III. In press.) This manual, which is the third in a series on methods of estimating population, furnishes an account of the relevant procedures employed by the United Nations in preparing population projections, and gives some practical exam-

✓ 3/ "Population and Food Supplies in Asia and the Far East", Economic Bulletin for Asia and the Far East, vol. VII, No. 1 (May, 1956), pp. 1 to 10.

ples. It incorporates and is complementary to the set of model life tables presented in Age and Sex Patterns of Mortality.

Proceedings of the World Population Conference, Rome, 31 August-10 September 1954.

Summary Report, E/CONF.13/412 (United Nations Publications, Sales No. 1955.XIII.8.) This volume contains information on the organization of the Conference, the programme of meetings, summary reports prepared by the rapporteurs of

the various meetings, and a list of participants and contributors.

Papers: Volume I, E/CONF.13/413 (United Nations Publications, Sales No. 1955.XIII.8[Vol. 1].) This volume contains papers submitted by contributors to the meetings concerned with discussions of fertility and mortality trends (Meetings 2, 4, 6, and 8 of the Conference). The papers are presented in the language in which they were submitted, and are followed by short summaries in English and French.