

THE DYNAMICS OF POPULATION IN JAPAN

A PRELIMINARY REPORT

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THE gradual industrialization of the great agrarian regions of southern and eastern Asia is probably inevitable. The economic and political problems involved in implementing plans for the maintenance of peace and for lessening the poverty of the peasant masses through assisted industrialization are probably the most difficult ones facing the statesmen of this generation. The relation of population factors to these economic and political problems is not remote and involved, but very direct and fundamentally very simple. Can the industrial and agricultural development of the overcrowded regions of India, Java, or China occur rapidly enough to provide even subsistence for the vastly increased populations that will be produced by the limitation of deaths which the industrial and political reformation will bring? The problem is even deeper for some areas. Are the cultural inertias and the lack of individual vitality produced by the extreme pressure of people on the land so great as to prevent any orderly development toward an economic organization that could lessen the extent of the ignorance and the poverty?

The population problems of Asia would not be avoided by acquiescence in the maintenance of subsistence agrarian economies. Rapid acceleration of population growth has followed the introduction of order, rudimentary sanitation, epidemic controls, famine relief, and agricultural improvements, not only under the comparatively benevolent and humanitarian rule that existed in India, Java, and the Philippines, but also under the system of exploitation imposed on Formosa and Korea by the Japanese. The rapid population growth produced by the reduction of mortality in a cultural milieu in which reproduction occurs at or near a physiological maximum

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creates a precarious balance between people and subsistence. Malthusian controls may be pushed into the future, but the recent famines in India and China make it quite apparent that the ultimate controls to population growth in these pre-industrial societies remain famine and disease.

Escape from the population dilemma that now characterizes southern and eastern Asia requires increased industrial and agricultural productivity, but no possible increases can result in permanent amelioration of living conditions unless the rate of population growth can be controlled. In fact, the rate of increase may accelerate for a considerable period of time if the richer and technically more advanced countries of the West cooperate in the industrialization of the East. More efficient administration, more rapid increases of the food supply, and more adequate health and sanitation programs may produce accelerated declines in mortality. If fertility does not decline, or fails to decline rapidly enough, these decreases in mortality may prove only temporary. Realistic discussion of the problems of population growth in relation to industrialization thus necessitates an analysis of the extent of and the chronological relationships between the declines in mortality and fertility that will accompany the economic transformation of southern and eastern Asia. It would be hazardous to assume that the patterns of declining mortality and fertility that have characterized the diffusing culture of the West would also characterize the industrializing cultures of the East. Perhaps the demographic correlates of industrialization are universal effects, independent of the differences in patterns of behavior and values in the indigenous cultures; perhaps they are not. Only the history which is yet to occur in Asia itself can give a definitive answer to this question, but clues to the answer may be secured from the population history of Japan, the one non-European nation that has achieved an industrial and an urban economy.

Analysis of the dynamics of population in Japan has implications for a variety of problems other than those of the possible future

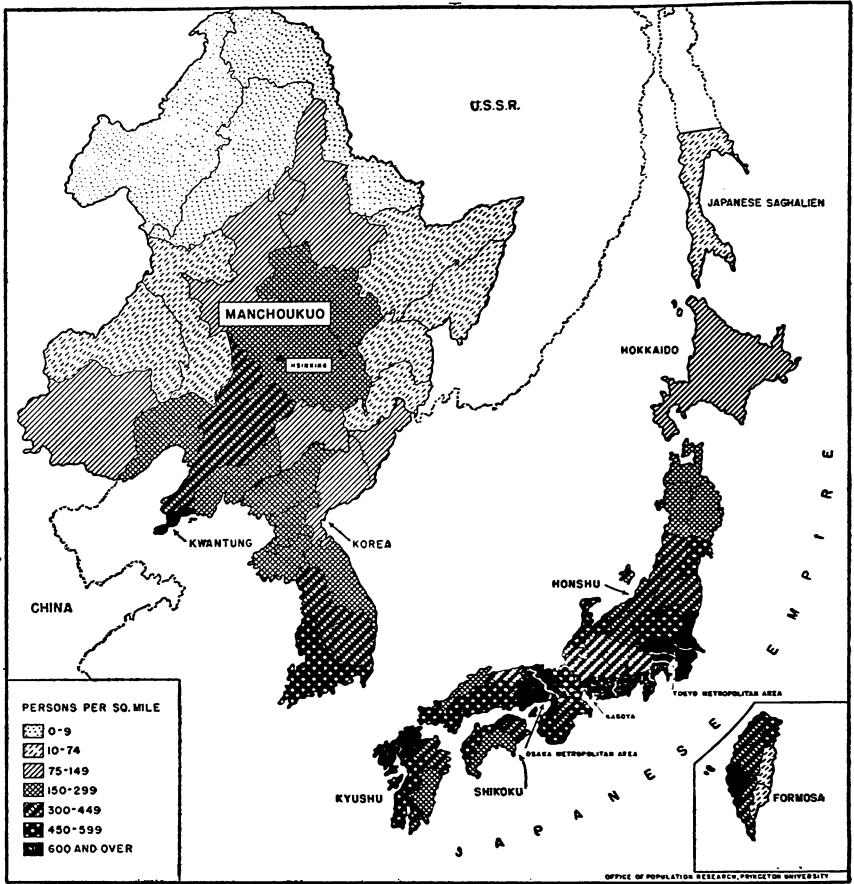


Fig. 1. Density of population in the Japanese Empire and Manchoukuo, Census of 1940.

trends in fertility and mortality on the Asiatic mainland or the islands of the South Pacific. The traditional picture of Japan which has been presented to the West is that of a grossly overpopulated island kingdom whose people must find job opportunities abroad, either by peaceful means or by conquest. This picture is buttressed by the citation of figures on population growth or population density, the latter measured by dividing total population by either total or cultivated land area. (Figure 1.) Many Japanese and Western students have concluded that the direct pressure of population on physical resources created the expansionist policies that led to war.

The accuracy of this analysis may be tested factually by two types of inquiry. First, what were the interrelationships between trends in fertility, mortality, urbanization, and economic structure? Second, what was the correlation between political ideology, military action, and the underlying population trends? It is obvious that Japanese experience cannot give definite answers to the problems of the interrelationships of population trends, cultural diversities, and political instability, but Japan constitutes the one non-European nation with statistical records adequate for fairly careful analysis.

The third and most obvious of the problems that can be approached through an analysis of Japanese population statistics is that of the future of the Japanese population itself. The era of Japanese history that began with the Meiji Restoration of 1868 will end with the capitulation, but the post-war culture will evolve in some way from that of the pre-war period. If the population losses of the war should prove to be no greater than those of the major belligerents of the First World War, then the nature of the demographic and resources situation of Japan will impose definite limitations on the type of policies that can be adopted if the Japanese are not to face physical decimation in the post-war period. The population trends and the correlated ideologies of the pre-war period have definite relevance to the plans of those who hope to avoid an Asiatic repetition of the history of post-Versailles Germany.

The following sections will present some preliminary materials from a larger study of population in Japan and her pre-war Empire. Some of the more important data known to have been published either by the scholars of Japan or by the Japanese Bureau of Statistics have not yet been located. The validation and the analysis of the available materials are incomplete. Hence the facts, the interpretations, and the hypotheses are tentative.

THE POPULATION HISTORY OF JAPAN

Japan's early history is broadly similar to that of England, with whom she is often compared. As an island region off the coast of

Asia, she received and assimilated successive waves of migrants and of culture from the mainland. She gradually became a great trading and colonizing power, with settlements scattered from the Philippines to Malaya. In the early seventeenth century, through a combination of factors, the most important of which was the fear of the influence of the Christian missionaries, Japan entered a period of 268 years of relative seclusion.³ Christianity was eradicated, shipping and trade barred, and the country ruled by absolute despotism. Peace and internal order replaced the warfare and the civil disorders that had characterized previous centuries. Agricultural productivity increased, the area of settlement expanded, and the population increased rapidly.

By the early eighteenth century the balance between people and rice had become so precarious that continuing population growth for any considerable period of time was impossible. From the first of the Tokugawa census counts in 1721 to the last in 1850, the population remained relatively constant, fluctuating between twenty-eight and thirty millions.⁴ This remarkable stability in total numbers did not represent a successful adjustment between people and their resources base. Rather, it was a precarious balance between the food-

³ For the history of the Tokugawa period, see: Honjô, Eijirô: *The Population and Its Problems in the Tokugawa Era. Bulletin de l'Institut international de statistique*, 1931, 25, No. 2, pp. 60-82. Tokyo, 1931.

The most careful study of the population of the Tokugawa period is said to be Eijirô Honjô's *Jinkô oyobi jinkô mondai* [POPULATION AND POPULATION PROBLEMS]. Tokyo, Nihon hyôron-sha, 1930. This study itself has not been located, but summary data and interpretations from it are given in an appendix on "The Population of Japan, with Special Reference to Its Abnormal Character during the Seclusion Period of the Tokugawa Shogunate," in: Kuno, Yoshi S: *JAPANESE EXPANSION ON THE ASIATIC CONTINENT*. Vol. II. Berkeley, University of California Press, 1940, xii, 416 pp.

For a critique of the statistics of both the Tokugawa and the modern precensal period, see: Frumkin, Grzegorz: *Japan's Demographic Expansion in the Light of Statistical Analysis. Sociological Review*, January, 1938, 30, No. 1, pp. 1-28.

⁴ These so-called censuses were only crude approximations to a count of the total population. The temple priests or the *mura* headmen reported the number of people and houses included in the register books (the *koseki* or *nimbetsu-chô*) and specified the increase or decrease since the last examination. The period of examination extended over several months. The court nobles, the samurai and their subordinates, and the Eta and the Hinin were excluded. Those below fifteen years of age usually could be counted or omitted at the option of the *daimyô* or governor of the district. Persons not listed in the registers of domicile were automatically excluded. The local limits were changed often. In addition, some areas failed to make returns.

producing potentialities of an inefficient and exploitative agrarian regime and a population growth checked only partially by the practices of infanticide and abortion. Historical chronicles substantiate the indications from the census counts that the pattern of mortality in Japan prior to the last half of the nineteenth century was similar to that of medieval Europe, or that of the isolated regions of contemporary China. The ultimate controls to growth were famine and epidemics, just as in other nonindustrial areas of the world.⁵ Even abortion and infanticide appear to have been techniques that flourished after the great calamities, not techniques consciously adopted in advance to forestall the calamities. They may have prevented the famines and the plagues from occurring more frequently, or with even more devastating effects, but they were not in themselves successful techniques for controlling population growth.

The economic and the demographic problems of the period of seclusion became ever more acute, with the growth of parasitic cities, the desertion of the countryside, and the decline in food production. An industrial and commercial class was gradually evolving, threatening the power of the shogunate. Then came the opening to the West, followed by the Meiji Restoration of 1868. A feudal agrarian regime was transformed into an industrial state through governmental direction and stimulation.

The evaluation of the effects of the long period of seclusion and the maintenance of a stable population during the period of the explosive political and demographic expansion of the West must remain in the realm of conjecture. Perhaps the decision for seclusion prevented Japan from securing that hegemony over the Asiatic mainland that would have resulted from the continuation of her

⁵ A careful study of the surviving records for several areas indicates a recorded birth rate of between 20 and 30 per 1,000 population. The population stagnation in these areas was due to a normally high death rate, plus catastrophic rises in famine periods. See: Sekiyama, Naotarô: Tokugawa jidai no shusse-ritsu-sono jakkan no jirei. [Birth and Death Rates in the Tokugawa Period—Some Examples]. *Jinkô mondai kenkyû* [Studies in Population Problems], June, 1940, 1, No. 3, pp. 32-43.

early policies of trade, colonization, and conquest. In this view, Japan's present population difficulties are due primarily to her seclusion during the period when the Western powers were building their empires. But it is equally possible to argue that Japan was able to unify her own culture and to avoid conquest by the West only through her policy of seclusion. It is significant to note that seclusion was adopted, not for its own sake but as the only feasible means of eliminating those proselyting activities of the Christian missionaries and traders that threatened the very existence of the feudal lords and the imperial family. Be that as it may, the Tokugawa period gave to modern Japan the tradition of population control and the small family system, plus folk memories of abortion and infanticide as acceptable controls to family size. Even more, it consolidated the political-economic system and unified the cultural values that have been the major barriers to the diffusion of Western patterns of fertility and mortality control.

The precise trends of population growth and distribution in the period from 1869 to 1920 are and probably will remain subject to great controversy. An attempt was made to secure all the needed population and vital statistics through the elaboration and centralization of a registration system, which covered not only Japanese in Japan but all Japanese wherever they might be. The usual difficulties were encountered.⁹

Whether the impact of the industry and culture of the West actually was accompanied by an increase in both birth and death rates, or whether the officially accepted increases are merely artifacts of the statistical system, has been a subject of considerable discussion in the Western literature on the Japanese population situation. The consensus of modern opinion is that the apparent increase in mortality was produced by more complete registration of deaths, and that if fertility increased it was an increase of recorded live births,

⁹ For a summary of these difficulties, and citations to Japanese sources, *see*, Ch. IV in Ishii, Ryôichi: *POPULATION PRESSURE AND ECONOMIC LIFE IN JAPAN*. Chicago, University of Chicago Press, 1937, xvi, 259 pp.

not an increase of conceptions. To the Japanese, the answer is simple. Official statistics are usually accepted as inviolate. The problem is not their validity but their interpretation. In this case, there is an obvious interpretation compatible with traditional Japanese thought. The increase in deaths is the natural effect of urbanization and contact with the communicable diseases of the West, while the increase in fertility represents a biological rejuvenation. The increase in the rate of national population growth proves at once the vitality of the Japanese people and the rightness of the Japanese system. Both Western students and the Japanese agree that, whatever the interpretation of trends in births and deaths taken separately, there was a great spurt in population growth. The population which had remained at approximately thirty millions in the hundred and fifty years between the first of the Tokugawa counts and the opening to the West doubled in the fifty years between 1870 and 1920.⁷ The question is the dynamic process by which this growth was accomplished, not the fact of the growth itself.

Fairly accurate and moderately extensive population and vital statistics for Japan are available only for the two decades between 1920 and 1940. Even here there are difficulties, since the suppression of significant data is apparent in 1935 and well advanced by 1938. Complete national censuses were taken in 1920 and 1930, including not only the number and distribution of the population and the usual demographic characteristics but also data on occupational and industrial composition and place of birth. Quinquennial censuses taken in 1925 and 1935 were simplified censuses, including only population, place of residence, sex, age, marital status, and racial origin, although the latter were not tabulated for empire nationals

⁷ Careful statistical tests reveal both the rather remarkable accuracy of the enumeration in the censuses of 1920 to 1935 and the extent and nature of the inaccuracies in the registration "censuses" that were made every five years up to and including 1918. The results of these tests will be published later. It is interesting to note that the discrepancies between the age distributions of the 1918 registration "census" and the 1920 enumeration census are precisely those to be expected on the basis of European experiences with registration systems.

in any meaningful way.⁸ The census of 1940 was a complete census, but the only material known to have been published is the geographical distribution, by sex.⁹ In addition, the censuses of 1920 through 1935 were *de facto* censuses of persons resident in Japan, while that of 1940 included "military personnel in active service, mobilized personnel . . . and those who, being outside the territorial limits of the Empire, have gone to the front as civilian employees in the military service, as members of the information service, as Shinto ritualists, Shinto priests, and religionists."¹⁰

Detailed vital statistics were published in yearbooks on vital statistics and causes of death, while summary tabulations were included in the statistical yearbook of the Empire of Japan.¹¹ The publication of most official vital statistics for both Japan and the Empire was suspended at the end of 1938. Thus for the period from 1920 to 1940 there were difficulties with and deficiencies in the basic statistical data, but this material permits much more intensive and controlled analysis than is possible for any other period of Japanese history, or for any other region of southern and eastern Asia at any time.

The rate of increase of the Japanese population during the censal period has been rapid. The total population increased from 55,963 thousand in 1920 to 73,114 thousand in 1940, an increase of 31 per cent in twenty years. The intercensal increase was 6.7 per cent in 1920-1925, 7.9 per cent in 1925-1930, 7.5 per cent in 1930-1935, and 5.6 per cent in 1935-1940.¹² The absolute increase reached a maxi-

⁸ Nihon. Naikaku tôkei-kyoku [Cabinet Bureau of Statistics]: *Kokusei chôsa hôkoku* [CENSUS REPORTS], 1920, 1925, 1930, and 1935.

⁹ Nihon. Naikaku: *Hôrei zensho* [Monthly Record of Legislation], April, 1941, pp. 559-653.

¹⁰ Translated from the instructions on the back of the census schedule, as reproduced in: Nihon. Naikaku [Cabinet]: *Genkô hôrei shûran* [Complete Collection of Laws in Force], Section 6, Sub-section 4: Kokusei chôsa [THE NATIONAL CENSUS], December 15, 1940, pp. 241/1-242/2.

¹¹ Nihon. Naikaku tôkei-kyoku [Cabinet Bureau of Statistics]: *Jinkô dôtai tôkei* [VITAL STATISTICS]. *Shiin tôkei* [STATISTICS OF CAUSES OF DEATH]. *Nihon teikoku tôkei nenkan* [STATISTICAL ANNUAL OF THE JAPANESE EMPIRE].

¹² The actual increase between 1935 and 1940 was even less, since the 1940 census was more inclusive than that of 1935.

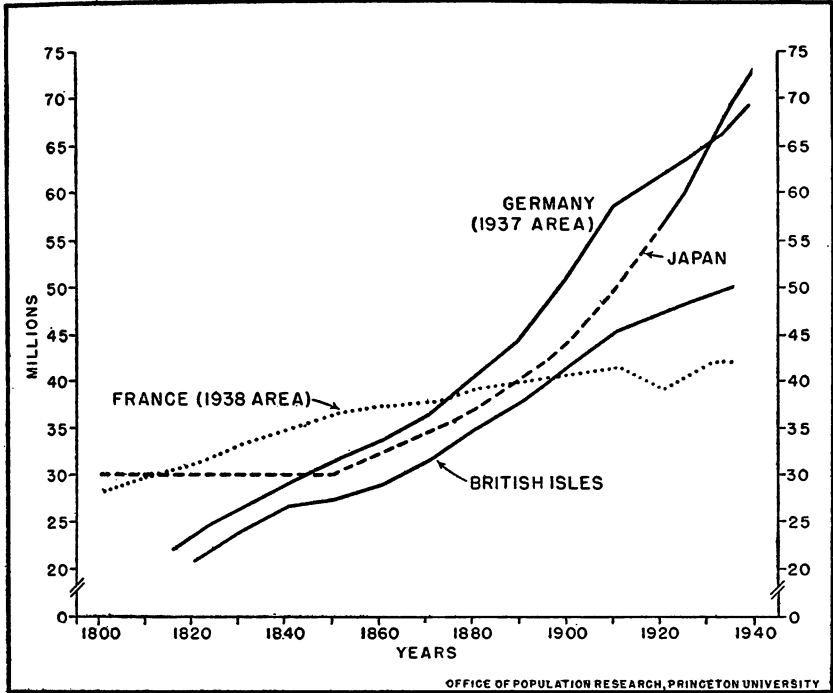


Fig. 2. Population trends in Japan and selected European countries, 1800-1940.

num of 4.8 millions between 1930 and 1935, and then declined to 3.9 millions during the war period from 1935 to 1940.

The changes during the recent twenty-year period do not answer the question as to whether the over-all trends in growth in Japan have been typical of those of western nations. Consequently, Figure 2 presents a comparison of population trends in Japan and certain western countries between 1800 and 1940. The trends in the various countries are dissimilar in their timing, and they differ in detail, but all represent similar reactions of populations to economic and cultural changes. Japan's period of what might be termed Malthusian stability lasted until 1850, but if the curves for the other countries could have been pushed back into the Middle Ages, similar long periods of a relative balance of births and deaths would have been found. Late and rapid industrialization produced a steep acceleration in the rate of growth of Imperial Germany, just as it did at a

later period in Japan. The deceleration in the rate of growth that became apparent in Japan a decade ago occurred earlier in the other countries as the momentum of growth produced by declining mortality was braked by declining fertility.¹⁸

The similarities in the broad population trends in Japan and the other industrializing nations should not be overemphasized to the neglect of the fundamental differences. The long period of seclusion during the Tokugawa regime with its balancing of rice and people left a far different heritage to Japan than did medieval Christianity to Europe. Neither is the pattern of industrialization and urbanization in modern Japan comparable to that which followed or accompanied the development of the Renaissance, the Reformation, and the capitalistic economies in the West. In Japan, the industrialization was superimposed on a culture whose dominant values were in many ways antithetical to the individualization of value systems and behavior patterns which has been so characteristic of the urban culture of the West. The industrialization of Japan was also accompanied by the maintenance of low levels of living, long hours of work, and the diversion of those surpluses that might have mitigated living and working conditions to the nonproductive uses of Empire and of War.

THE URBANIZATION OF THE POPULATION STRUCTURE

The growth of the total population is a gross figure produced by changing levels of fertility, mortality, and migration. It reveals little as to the real population problem of a country, which is not population growth or decline *per se* but the present and potential future relationship between people and the number and types of job opportunities available to them. The actual measurement of this relationship within Japan will not be attempted in the present paper.

¹⁸ Detailed comparisons of rates of change at given time periods or at comparable historical stages are hazardous because of the known inaccuracies in the population counts or estimates, not only for Japan but also for the countries of Europe. However, the range of error in the early estimates, even in the case of Japan, is not sufficient to alter the essential validity of the main conclusions.

Rather, it will be approached indirectly through a study of the urbanization of the country on the assumptions that residence in urban areas represents dependence on sources other than agriculture for a livelihood, and that migration from one type of area to another within a country tends to represent the attractive force of superior economic opportunities.

The analysis of internal migration in Japan is difficult because of the paucity of statistics. The population gainfully occupied in or dependent on agriculture is known at only two time periods, 1920 and 1930.¹⁴ Information on rural and urban populations is available for each census period, and there are yearly estimates of change, but the urban population is defined as that resident in incorporated areas (*shi*). Most *shi* have populations of 30,000 or more, but some urban places of 30,000 or more are not incorporated as *shi*. Both the 1920 and the 1930 censuses secured information on place of birth, and this permits a considerable but definitely limited analysis of the historic processes of internal migration. The registration system is still maintained, but no current migration statistics based on it have been located. Hence indirect techniques must be utilized.

The population residing in places of 10,000 or less may be taken as equivalent to the rural population of Japan.¹⁵ The percentage of the total population residing in such rural places decreased from 67.7 per cent in 1920 to 54.1 per cent in 1935, and was still lower in 1940, although the precise figure is not yet available. The extent of the decrease varied widely from prefecture to prefecture, but in no one of the 47 prefectures was the proportion of the total population resident in rural places greater in 1935 than in 1920. Even more significant, however, is the fact that, for all Japan, relative stability in total numbers characterized not only the agricultural population *per se*, but also the population living in rural areas as defined here.

¹⁴ Precensal estimates are available, but they are not valid for detailed analysis.

¹⁵ The Japanese define the rural population to include all people not resident in places incorporated as *shi*. However, it is more in accord with both Western usage and the realities of the situation in Japan to utilize the Japanese statistics on size of place and define rural as all places of less than 10,000 population. See: Ishii, Ryōichi: *Op. cit.* pp. 69-73.

The number of persons resident in places of 10,000 or less was 37.9 millions in 1920, 37.5 millions in 1935. The entire natural increase of the high fertility rural areas had been absorbed in urban areas, either directly through migration or indirectly through the growth and incorporation of previously rural areas.

There were wide regional differentials in the relative decline of the rural population. Actual increases occurred in the majority of the poor and backward prefectures of northeast Japan, while the depopulation of the countryside was in process around the large metropolitan centers and in the more advanced and prosperous agricultural areas of the southwest. In Japan, as in the United States, rural-urban migration appears to be heaviest from the agricultural regions which themselves offer superior economic opportunities. The pile-up on the land occurs in isolated and poor areas characterized by subsistence rather than commercial agriculture.

The changes in the places of ten thousand and over reflect an ever greater absolute and relative concentration in the more densely settled areas, with some irregularities in the patterns of change as increasing populations push communities into larger and larger size classes. The trend toward urbanization is most clearly reflected in the growth of cities of 100,000 and over. These cities contained 12.1 per cent of the total population in 1920, 14.6 in 1925, 17.5 in 1930, 25.3 in 1935, and 29.1 per cent in 1940. This rapid urbanization has been concentrated in a fairly small portion of Japan, the central region. The prefectures containing the great cities of Tokyo, Osaka, Yokohama, Nagoya, Kyoto, and Kobe contained 13.3 million people in 1920, 22.5 million in 1940. The rate of increase of the largest cities was less between 1935 and 1940 than it had been in the earlier intercensal periods, while many smaller cities and the suburban areas of the great cities grew at more rapid rates. The detailed pattern of urban growth between 1935 and 1940 reflected the effects of the economic and military preparations for the war in process and the war that was to come.

Population changes that have accompanied the industrialization of Japan have been similar in broad outline to those that occurred in Occidental nations undergoing similar transformations. The process has been greatly accelerated; the relative growth of cities of 100,000 and over in Japan between 1920 and 1935 was practically as great as that which occurred in the United States between 1900 and 1940. Rural areas, villages, and even towns of up to 30,000 population have either lost population or barely maintained their numbers. The population remaining within prefectures has been redistributed, rural areas remaining stable or changing slowly, cities increasing rapidly. Moreover, the vast majority of the prefectures have contributed appreciable proportions of their natural increase to the expanding metropolitan centers of Tokyo, Yokohama, Osaka, Nagoya, Kobe, and Kyoto, and to a lesser extent the cities of Fukuoka and the developing industrial region of the southwest.¹⁶

The demographic significance of the urbanization of the Japanese population is apparent to all students of population in the industrializing areas of the West, where the changed conditions of living and working have been accompanied by reductions in both mortality and fertility. A preliminary analysis of the extent to which the accelerated urbanization of Japan has had similar effects will be presented in the final sections of this report.

The implications of the urbanization of the Japanese population for the interpretation of the problems of Japan and the analysis of the relevance of Japanese experience to the probable future of Asiatic countries can only be mentioned here. Japan has maintained approximately a stable ratio of rural population to cultivated or cultivable land. Except in limited areas, the vast increase in population has not been accompanied by the increasing pressure of a rapidly growing agricultural population on the land. Rather, there have been alternative opportunities in the industry, commerce,

¹⁶ For a more detailed note on internal migration and population redistribution in Japan, see: *Population Index*, April, 1943, 9, No. 2, pp. 73-77.

trade, transportation, service industries, and professions of the cities. Whether or not the entire natural increase of the vast agrarian regions of the Asiatic mainland or the Netherlands Indies can be channeled into the cities and nonagricultural employment is a problem for separate analysis. If this is not possible, then it is quite apparent that the declines in mortality and fertility which accompany industrialization will differ in both extent and timing from those that have occurred in Japan.

TRENDS IN MORTALITY

The problem of the changes in death rates during the period of industrialization is so basic to the interpretation of the demographic correlates of the transition away from the Tokugawa system that it merits careful analysis. The official reports indicate that the crude death rate increased irregularly from 20.7 in 1886-1890 to 23.6 in 1916-1920, and then declined to 21.9 in 1921-1925, 19.4 in 1925-1930, and 17.9 in 1931-1935. Although the official Japanese reports attribute the early increase in mortality to the spread in infectious diseases which came with the opening to the West, it seems probable that the increase is due primarily to more complete reporting. Recorded rates for infant mortality increased fairly consistently from 116 per 1,000 live births in 1886-1890 to 174 in 1916-1920, and then declined to 121 in 1931-1935.

Analysis of the life tables for the precensal and censal periods corroborates the theory that the increase in death rates with urbanization and industrialization was spurious. Life-table death rates increased at practically all ages between 1908-1913 and 1921-1925, but the 1908-1913 age-specific rates were computed on the basis of a registration "census" that was between one and two million too high in total population, while the 1921-1925 tables were based on census enumerations that bear internal evidence of being quite accurate. If the comparison is made between the life tables of 1899-1903 and 1908-1913, both of which were based on age distributions

of registered populations, the conclusion is quite different. The mortality in 1908-1913 was higher than that in 1899-1903 at only two periods of life, ages 0 and 1, and ages 15 and 20. At all other ages it decreased. This is the pattern one would expect if the registration of infant deaths were still incomplete but improving, and if, as was the case, the major difficulty with the registration system was the failure to remove young migrants from the registration records in the rural areas from which they came.

The period of conjecture as to the trends in the mortality of Japanese in Japan Proper ends with 1920, only to begin again with the cessation of vital statistics publications in 1939. For the eighteen years between 1920 and 1938 there are detailed statistics on deaths by age and sex and by cause for the entire country and for prefectures, and deaths by age and sex for cities and minor civil divisions. The general pattern of change in crude rates, age standardized rates, and life-table death rates is downward until 1938, with the exception of the rates for men in the prime military ages. The expectation of life at birth for males increased from 42.06 in 1921-1925 to 44.82 in 1926-1930 and 46.92 in 1935-1936; for women, it increased from 43.20 in 1921-1925 to 46.54 in 1926-1930 and 49.63 in 1935-1936.

Significant relationships are evident in the pattern of mortality in Japan and in its changes. In general, mortality has declined much more rapidly for females than for males, but the mortality of females remains extraordinarily high. In 1920-1925, the probability of death for females rose above that for males at age 11 and remained above it until age 41; in 1926-1930, the period of excess female mortality lasted from age 14 until age 41. This general pattern is still discernible in 1935-1936, although it is disturbed by the increase in the probability of death for males between ages 22 and 33. For both males and females, and in all life tables, the probability of death rises to a temporary plateau from about age 18 to age 23 or 24 and then declines irregularly until age 35, after which there is a con-

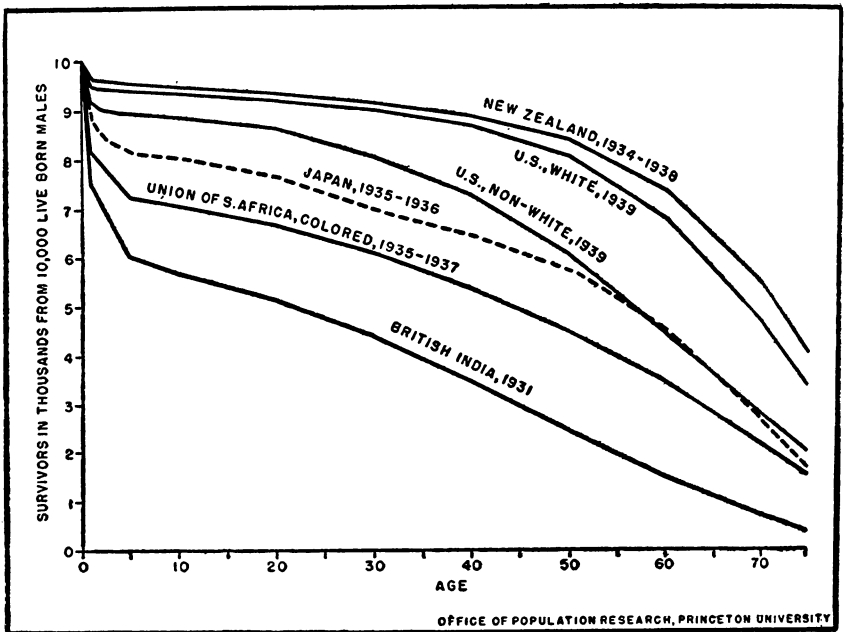


Fig. 3. Number of survivors per 10,000 live born males, Japan and selected countries.

continuation of the increase in the probability of death.³⁷ All of these peculiarities are theoretically plausible if one considers the position of women in Japanese culture, and the high mortality produced in the late adolescent and early adult ages by the heavy migration to the cities, especially for males, and the still heavy burden of child-bearing for women.

The peculiarities in the age-sex incidence of mortality and its changes are so great that it is difficult to make precise comparisons between Japan and other countries. The expectation of life at birth for males in Japan in 1935-1936, 46.92 years, was similar to that in Poland, Bulgaria, and the Ukraine in the late 'twenties and the early 'thirties of the present century, or to that in France, Italy, and Germany immediately before the First World War, or to that in

³⁷ Japanese students have classified the q_x curve for prefectures into types largely on the basis of the extent of this peak at about age 20 and the extent of the trough that followed it. See Mizushima, Haruo, *et al.*: *Fuken-betsu seimei-hyō. Dai ikkai* [An Abridged Life Table for Each Prefecture of Japan]. *Chōsen igakkai zasshi* [Journal of the Chosen Medical Association], August, 1938, 28, No. 8, pp. 1136-1176.

Denmark, The Netherlands, England and Wales, Sweden, or Australia in the last decade or two of the nineteenth century. The number of survivors to each age among the male population of Japan and of selected countries is shown in Figure 3. Interestingly enough, the number of survivors among Japanese males in 1935-1936 throughout the life span was lower than that among United States nonwhite males, but higher than that among the colored population of the Union of South Africa.

The impact of the Japanese economic and political transformation on mortality is portrayed graphically in Figure 4. The infant death rate for Japanese males in 1935-1936 was 114. Comparable rates occurred in England and Wales, 1901-1910, and in The Netherlands, 1900-1909, but in these countries at these periods the probability of death at all ages after infancy was much lower than in Japan in 1935-1936. To secure a mortality equal to that for Japanese males at age 20, one has to go back to The Netherlands' experience of 1850-1859, at which time the infant mortality was almost 214, not 114 as it was in Japan in 1935-1936. No mortality at age 20 in English life-table experience has been as high as that in Japan in 1935-1936.

Mizushima Haruo and his colleagues of Keijo Imperial University have computed abridged life tables for each prefecture of Japan for the two periods, 1926-1930³⁸ and 1930-1935.³⁹ In general, the expectation of life at birth is lower in the northeast, higher in the southwest (Figure 5). It is lower in the prefectures of Back Japan facing the Japan Sea, higher in the prefectures facing the Pacific. Between 1926-1930 and 1930-1935, the mortality improved most in the prefectures of northeastern Japan, where it was highest, and in the prefectures containing such large cities as Tokyo, Osaka, Kyoto, Nagoya, and Fukuoka. The improvements were greatest for infants, and in general higher for females than for males. Increase in the

³⁸ Mizushima, Haruo, *et al.*: *Ibid.*

³⁹ Mizushima, Haruo, *et al.*: Fuken-betsu seimei-hyô. Dai nikai [The Second Abridged Life Tables of Prefectures in Japan]. *Chôsen igakkai zasshi* [Journal of the Chosen Medical Association], September, 1939, 29, No. 9, pp. 1768-1803.

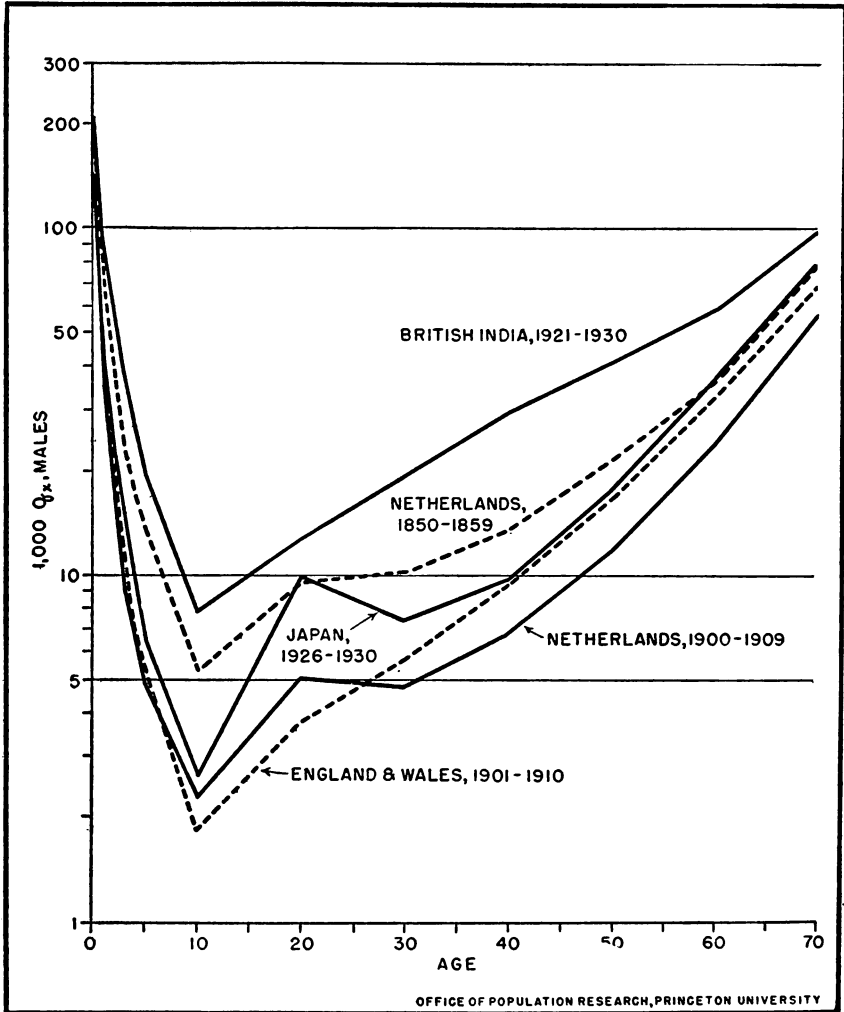


Fig. 4. Age schedule of mortality for males in Japan and selected countries.

mortality of males between the ages of 20 and 35 is apparent in most of these prefectural life tables. (It may be stated that this increase in q_x values appears to have been due to a general deterioration of health conditions rather than to direct military mortality.)

Detailed analysis of these prefectural life tables gives a rough quantitative measure of the human price Japan has paid for her rapid industrialization and urbanization, with its comparative neg-

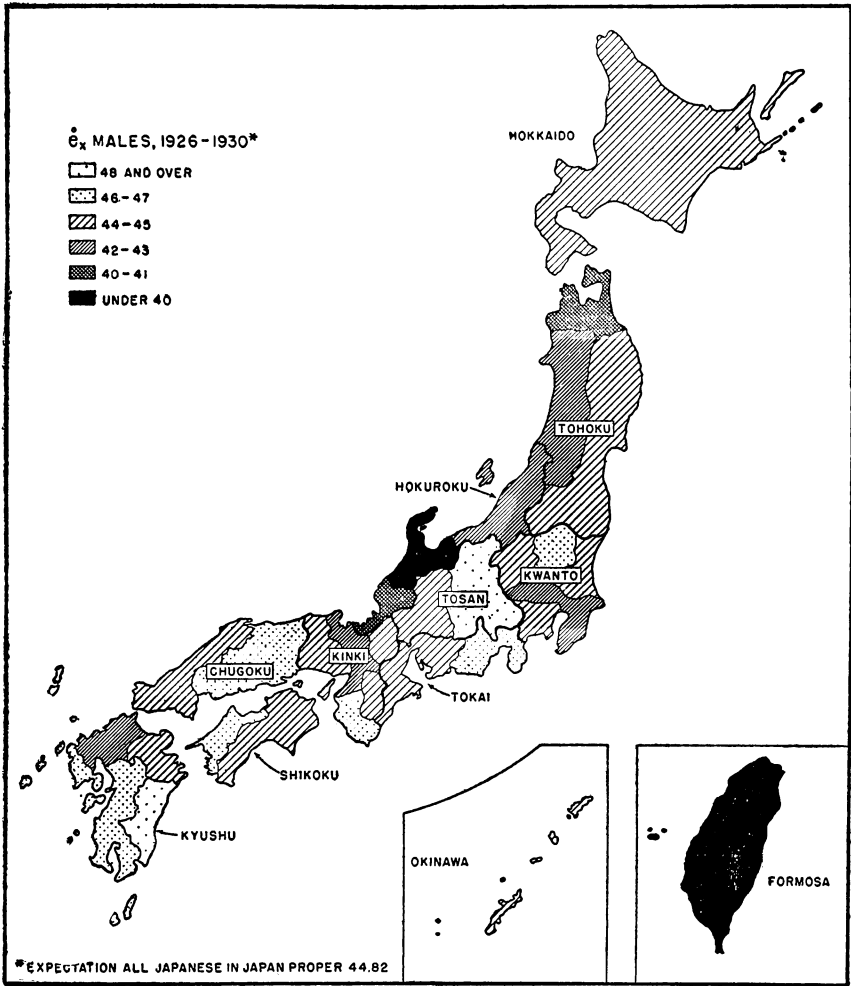


Fig. 5. Expectation of life at birth, males, for prefectures of Japan, 1926-1930.

lect of such details as sewer systems for her cities. In general, the proportion of children surviving from birth to age 5 is high in the southwest, small in the northeast, a relationship expected on the basis of the cultural and economic differentials between the two regions.²⁰ The proportion surviving from age 6 to age 12 is quite similar throughout the country. The proportion surviving from

²⁰ Mizushima, Haruo, *et al.*: Seison-hi yori mitaru kenkô-do no chiri teki bumpu. [Geographical Distribution of the Survival Ratio in Japan]. *Chôsen igakukai zasshi* [Journal of the Chosen Medical Association], November, 1939, 29, No. 11, pp. 2137-2152.

age 17 to age 32 is low in the southwest and the cities, high in the northeast and the agricultural areas. Similarly, the percentage surviving from age 32 to age 62 is low in the great urbanized prefectures, high in the agricultural regions. The knowledge and facilities of the cities and the industrial regions apparently permit the saving of infant and child life, but cannot counteract the influence of the poor working and living conditions in the industrial regions and the great cities.

Admittedly the mortality which has been described is high, but it is surprising that it is not higher. The per capita production of rice, or even the per capita real income, may have increased somewhat in Japan, but levels of living remain extremely low in comparison with those of Western peoples who either have gone or are going through industrial transformations similar to those that were occurring in pre-war Japan. Great maldistribution of wealth has continued to exist. In recent periods the surplus that might have gone either into increases of distributed real income or into publicly constructed improvements and services has gone into preparation for war or war itself. Infant mortality has decreased with astonishing rapidity, much more rapidly than it did in most European countries when their general schedules of mortality were at comparable levels. But the trends in adult mortality, especially of males, reveal clearly the price Japan was paying for a system in which human welfare had a low priority. At the same time, it must be emphasized again that mortality has declined in Japan, and that even forced industrialization under an unfavorable economic and political system has raised the expectation of life far above what it would have been in a subsistence agrarian economy.

What is the future trend of mortality in Japan? The military and civilian deaths of the war period cannot be predicted, but unless the population of Japan is decimated by famine and epidemics, the trends of the future will develop from those of the past. If Japan should be forbidden access to world markets and world trade, her

cities and her industries destroyed, there would be little chance of avoiding appreciable increases in mortality. If the period of the peace sees even a fairly adequate solution to the economic difficulties of Japan, death rates may fall much more rapidly in the future than they have in the past. Mortality in post-war Japan is a dependent, not an independent variable.

TRENDS IN FERTILITY

The statistics for an analysis of Japanese fertility are quite deficient. There is no national information on birth order, size of completed family, or number of children ever born. The Cabinet Bureau of Statistics made special studies of the number of births by age of mother in 1925 and 1930. There was increasing agitation for adequate fertility data through the 'thirties, but few of the plans were realized. Yearly tabulations of births by age of mother and occupation of father or mother were initiated in 1937,²¹ but they are of limited value pending the availability of the detailed results of the census of 1940. Many special studies have been made, but the few discovered are limited in both materials and methodology. In any event, systematic analysis of these studies is impossible because only a small proportion of the original publications are available.

There is little definitive information on the trend of the birth rate in Japan in the centuries prior to 1920, or even in the decades between 1868 and 1920. Births and deaths were balanced to produce the population stability of the latter half of the Tokugawa period, but it is impossible to determine the precise level of either fertility or mortality. The number of infants surviving the neonatal period was cut by both abortion and infanticide, but the scattered statistics which have been discovered are not sufficient to permit adequate quantitative analysis. The most probable hypothesis is that, despite

²¹ A tabulation for the total country and each prefecture of births by sex and legitimacy status according to the occupation of the father or mother was first published in 1937. See: Nihon. Naikaku tōkei-kyoku [Cabinet Bureau of Statistics]. *Jinkō dōtai tōkei* [VITAL STATISTICS], 1937, pp. 46-51.

these practices, the fertility of the Tokugawa period would have yielded rapid population growth if mortality had not been high.²²

The official birth rates for the period between 1872 and 1920 were computed by relating registered births to total population counts secured by summation of the registers. As such, they are subject to the same biases that characterize mortality statistics for this period. The recorded birth rate increased quite consistently from 28.5 in 1886-1890 to 34.6 in 1921-1925. There were two factors operative in producing this upward trend, one; the continued improvement in registration; the other, the gradual decline of infanticide and abortion. Analysis of the probable improvement in the completeness of birth registration in the later decades of the precensal period is in process, but too incomplete to permit a quantitative estimate of the effect of the improvement in registration on the birth rate. Statistical analysis of the decline in the prevalence of abortion and infanticide is impossible.

The fact of decline in the birth rate of Japan in the recent period cannot be doubted. There was an almost continual decline from a quinquennial average of 34.6 in 1921-1925 to 33.5 in 1926-1930, 31.6 in 1931-1935, 30.6 in 1936, 30.8 in 1937, and 27.0 in 1938. These declines, although appreciable, are proportionately less than those that occurred in the nations of Europe during the same period of time.

The discovery of the regions or the population groups within Japan that were responsible for the observed declines in the national birth rate, or, conversely, of those regions or population groups that were responsible for the slowness of the decline, requires study of the differential patterns and trends within Japan. The distortions in age and sex structure produced by the migration of youth to the large cities and the industrial regions are so great that the use of crude rates for comparative analysis within Japan is hazardous.²³

²² Sekiyama, Naotarô, *Op. cit.*

²³ For a Japanese attempt to grapple with these problems through the standardization
(Continued on page 245)

The fragmentary data on births by age of mothers must be utilized, despite their quantitative inadequacy and their qualitative deficiencies.²⁴

The declining fertility of Japan has been due primarily to the decline in births to women in the age groups under 25. The number of births per 1,000 women 15 to 19 years of age declined from 21 in 1925 to less than 10 in 1937; that to women 20 to 24 declined from 112 to 87 during the same period. There was no appreciable change in the fertility of women aged 25 to 29. Birth rates to women thirty years of age or over declined consistently throughout the period. The net effect of these declines in the various age groups was a consistent decrease in the gross reproduction rate for all Japan from 2.5 in 1925 to 2.4 in 1930, 2.2 in 1937 and 2.0 in 1938.

The fertility decline in Japan between 1920 and 1937 or 1938 is related to the precipitant decline in the proportions married at the

of birth and death rates, *see*: Tate, Minoru: Waga kuni jinkô no chihô-betsu zôshokuryoku ni kansuru jinkô tôkei-gaku teki ichi kôsatsu [A Statistical Examination of the Reproductive Power of the Population, by Districts]. *Jinkô mondai* [Population Problems], December, 1936, 1, No. 4, pp. 453-483; June, 1937, 2, No. 1, pp. 217-238.

²⁴ Tabulations of births by age of mother for all Japan and for cities of 100,000 and over have been published for 1925, 1930, 1937, and 1938. For 1925, *see*: Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Fubo no nenrei to shusseï to no kankei* [Births in Relation to Age of Parents]. *Chôsa shiryô* [RESEARCH MATERIALS], No. 1. Tokyo, 1927.

Tabulations for all Japan, cities of 100,000 and over, and the individual prefectures for 1930 were published in: Nihon. Naikaku tôkei-kyoku, jinkô-ka [Statistical Bureau of the Cabinet, Population Section]: (*Showa go-nen*) *Fubo no nenrei-betsu shusseï oyobi shisan tôkei* [STATISTICS OF LIVE BIRTHS AND STILLBIRTHS BY AGE OF PARENTS IN 1930]. Tokyo, 1935. This publication has not been located, but some data from it are quoted in secondary sources.

Tabulations for all Japan and cities of 100,000 and over for 1937 and 1938 were published in: Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Jinkô dôtai tôkei* [YEARBOOK OF VITAL STATISTICS], 1937 and 1938. Tokyo, 1938 and 1939.

Age distributions of women were taken directly from the various census volumes and refer to October 1 rather than July 1. Those for cities of 100,000 and over were secured by summation of the age distributions for individual cities given in the individual prefectural volume of the various censuses. The estimated age distributions for cities in 1937 and 1938 made by Etô were utilized after checking them against the age distributions of the 1935 census. *See*: Etô, Masami: Tohi-betsu jinkô shizen zôka-ritsu no hikaku [The True Rate of Increase of Urban and Rural Populations in Japan]. *Fukuoka igaku zasshi* [Hukuoka Acta Medica], May, 1941, 34, No. 5, pp. 78-94.

Numbers of births were taken from: Japan. Bureau de la Statistique générale du Cabinet impérial: *Resumé statistique du mouvement de la population* . . . Tokyo, 1920-1936. Numbers of births and deaths for 1937 and 1938 for prefectures and cities were taken from: Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Nihon teikoku tôkei nenkan* [STATISTICAL YEARBOOK OF THE JAPANESE EMPIRE], 1938 and 1939.

younger ages, but the problem of measuring the proportion of the decrease in fertility due to decline in marriage or increasing age at marriage as against that due to decline in marital fertility is almost insoluble. The census definition of marital status is a *de facto* one, including both formal and informal marriages. Marriage statistics refer only to formal marriages, and in the vital statistics only the child of a formal marriage is legitimate. Illegitimate children include both the true illegitimate, socially defined, and the children of informal marriages. Since illegitimate births constitute only a small proportion of all births, an approximate measure of the trends in marital fertility between 1925 and 1930 may be secured by relating both legitimate and natural live births (excluding the recognized illegitimate²⁵) to the number of married women as defined in the census. This admittedly crude technique reveals a different pattern of change from that given by relating all live births to all women of specified ages. Birth rates for married women aged 15 to 19 and 20 to 24 changed only slightly, while there was a decline of ten per cent in the birth rate to married women aged 25 to 29, the age group for which total fertility revealed no change. Birth rates to married women aged 30 or above also declined.

Two conclusions seem justified on the basis of the changing fertility schedules for all Japan. First, the decline in the fertility of women in the younger ages is related to the decline in early marriages, however marriage is defined. Second, the fertility of the married has declined in the later years of the reproductive period. An attempt is being made to determine the proportionate relationship between declines in fertility and declines in the proportion married at the various ages. Even this information, however, will give no definite answer to the problem of causal relationships involved here. Informal marriages are recognized and socially ac-

²⁵ A "recognized illegitimate" infant is one which though not born of a registered marriage has been legally "recognized" by its father. For a discussion of the status of such children, see the article "Shoshi . . . (enfant naturel reconnu)" in: *Hôritsu-gaku jiten* [DICTIONARY OF LAW], Iwanami shoten, Tokyo, 1934-1939, p. 1384.

cepted unions that tend to be transformed into formal marriages before the birth of a child. Hence the diffusion of birth control might be expected to postpone the registration of the informal marriages and thus produce an increase in the average age at first marriage as legally defined. Nuptiality tables constructed on the assumption that only formal marriages produced changes in marital status indicated that the decreases in the proportions married in the successive censuses are due primarily to decreases in informal marriages.

The analysis of the relationship between declines in fertility and economic changes within Japan is still incomplete, but preliminary results indicate that the strong positive correlation between urbanization and declining fertility which has characterized Western culture also exists in Japan. Fertility in cities of 100,000 and over has been consistently much lower than that in the remainder of the country, and prior to 1938 the declines were much greater. The pattern of decline by age groups was similar to that for the entire country, i.e., precipitant declines at ages under 25, relative stability at ages 25 to 29, and decreases at the higher ages. (Figure 6.) Gross reproduction rates declined from 1.8 in 1925 to 1.7 in 1930, 1.6 in 1937, and 1.4 in 1938. The extent of the decline in 1938 is due to war and mobilization for war. There is no evidence that war had affected births appreciably prior to 1938, except in so far as the preparations for war hastened the urbanization and industrialization of the population.

The pattern of change outside cities of 100,000 and over was quite different. Birth rates to mothers under age 25 declined while those to mothers aged 25 to 29 increased, but above age 30 changes were slight. Fertility declines occurred primarily in the age groups in which the census statistics revealed a decided drop in the proportion married. In age groups in which the proportion married remained the same, there was little decline in fertility. It appears that the pattern of controlled fertility has not spread to any appreciable

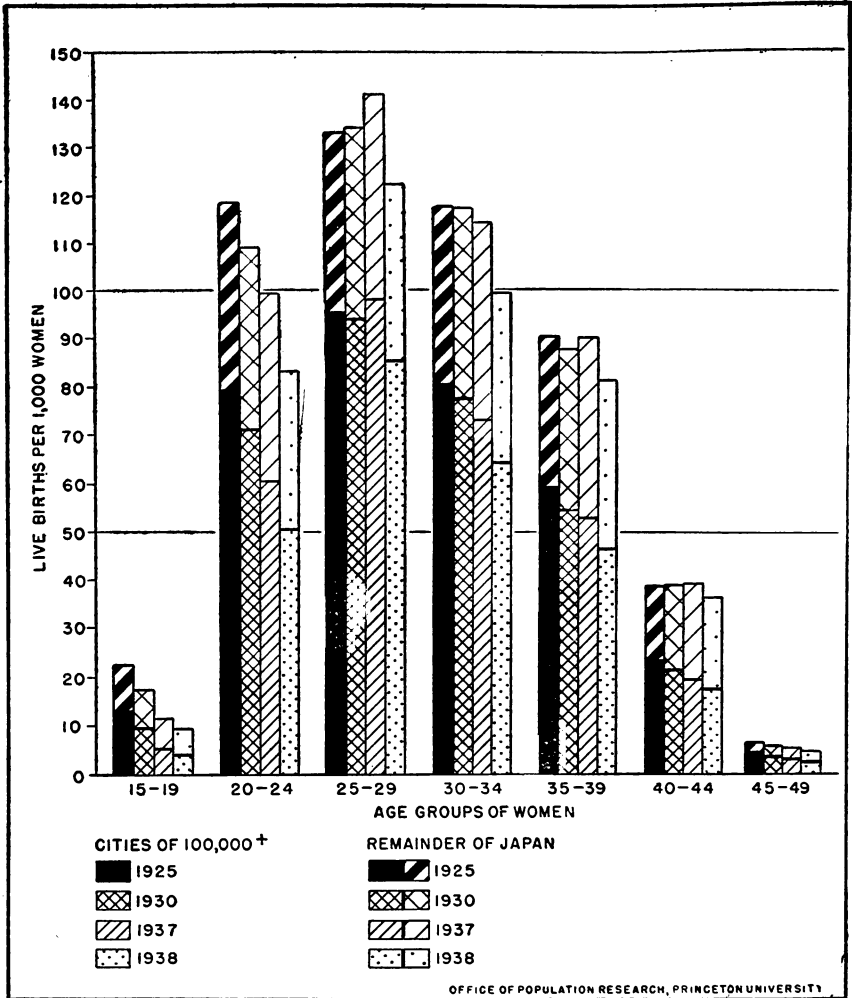


Fig. 6. Age schedules of fertility for Japanese cities of 100,000+ and for the remainder of Japan, 1925, 1930, 1937, and 1938.

extent outside the cities of Japan. Incontrovertible evidence of controlled fertility is found only in the vital statistics of cities of 100,000 and over, where age-specific birth rates declined continuously in the age groups in which marital status as indicated by census returns has remained almost constant.

Since some of the prefectural census volumes for 1920 are not available, the description of the trends in reproduction rates from

1920 through 1935 must be based on the age distributions for urban and rural areas as officially defined. Indirect standardization must be used, since the only schedules of births by age of mother available are those for all Japan, cities of 100,000 and over, and a few of the individual cities.

The trend of the gross reproduction rate has been downward from 1920 to the present for all Japan, cities and regions outside cities. In the fifteen years between 1920 and 1935, the gross reproduction rate for all Japan declined from 2.6 to 2.2, for urban areas from 1.8 to 1.6, and for rural areas from 2.8 to 2.6 (Figure 7). The trend in net rates is much less pronounced, since there were continuous

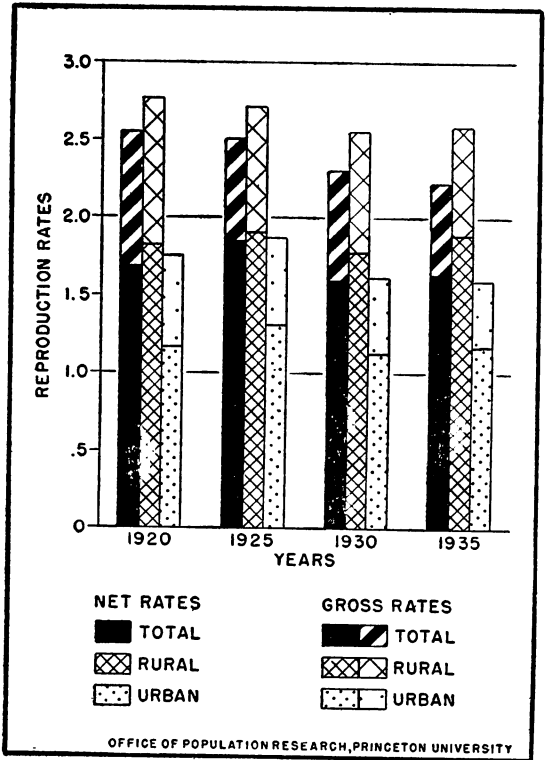


Fig. 7. Gross and net reproduction rates for Japan: total, urban, and rural for 1920, 1925, 1930, and 1935.

and fairly rapid declines in the mortality of women before and during the reproductive years. For Japan as a whole, these declines in mortality almost counterbalanced the declines in fertility. The net rate for all Japan declined from 1.7 in 1920 to 1.6 in 1935; for urban areas, it was 1.2 at both periods, and for rural areas, it increased from 1.8 to 1.9. It should be noted that the net reproduction rate for the country as a whole could decline while the rates for both urban and rural areas remained almost stationary because the urban population constituted a rapidly increasing proportion of the total. Real

declines in net reproduction rates occurred in all areas in 1938, when the war-induced declines of fertility and increases in mortality lowered the net reproduction rate for cities of 100,000 and over to 0.97, while that for areas outside cities of 100,000 and over declined to 1.48.

The trend of fertility in the six large cities of Tokyo, Osaka, Kobe, Kyoto, Nagoya, and Yokohama reflects the more intense impact of urban culture. Gross rates for these six cities show no trend between 1920 and 1925, but decline consistently for each city and each time period between 1925 and 1935. Age schedules of fertility for the six cities as a whole in 1935 were similar to those for cities of 100,000 and over in 1937, but there were differences in the level and the age pattern of fertility among the cities. Age specific birth rates were relatively low in Osaka, Kobe, and Kyoto, and relatively high in Tokyo, Yokohama, and Nagoya. Net reproduction rates were below unity for Tokyo, Osaka, and Kobe in 1920 and for Osaka and Kobe in 1930 and 1935.

Preliminary gross and net reproduction rates are being computed for each prefecture for each of the census periods from 1920 through 1935. These rates should be regarded as exploratory, not definitive, since there are major methodological problems involved both in the determination of the age schedules of fertility to be used for standardization and in the computation of mortality schedules which will take into consideration the continuing decline from 1920 through 1935.

Gross reproduction rates for prefectures in 1930-1931 portray in accentuated form the urban-rural and industrial-agricultural pattern of regional differentials so apparent in the crude birth rates. (Figure 8.) The five prefectures with gross rates of less than two included four of the six largest cities: Tokyo, Osaka, Kyoto, and Kobe. The eight prefectures with gross reproduction rates of between 2.0 and 2.24 either contained or were adjacent to large cities. The seven prefectures with gross rates of 2.75 or above were all in

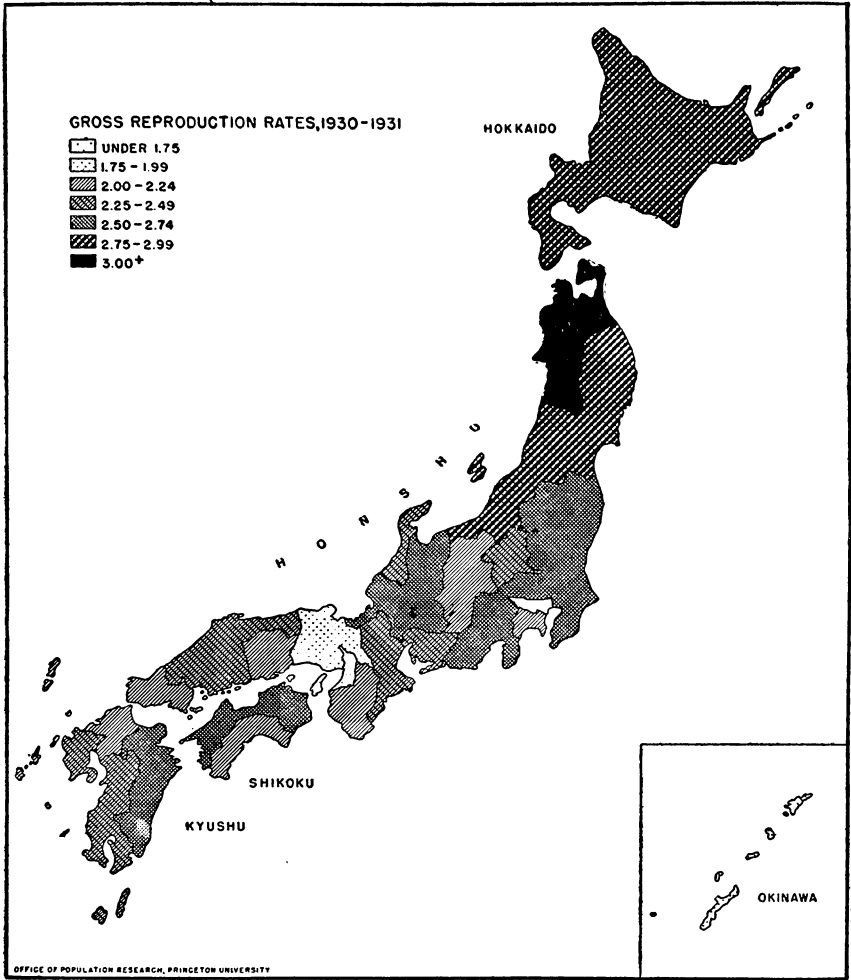


Fig. 8. Gross reproduction rates for prefectures of Japan, 1930-1931.

the backward agrarian regions of northeast Japan. Declines in gross reproduction rates occurred in each of the 47 prefectures of Japan except Okinawa in the decade between 1925 and 1935.

The problem of prefectural changes in net reproduction rates is more difficult than that of gross rates, since declines in fertility and mortality were occurring simultaneously in all prefectures. Net rates computed for 1925 and 1930 by using the survival values from the 1926-1930 prefectural life tables for both time periods indicate a

decline in net reproductivity in each of the forty-seven prefectures. This conclusion cannot be accepted, however, since gross reproduction rates that were declining have been transformed into net rates on the false assumption of constant mortality for each prefecture. Net rates computed for 1930 and 1935 by using the survival values from the 1926-1930 life tables for 1930 and those of the 1930-1935 life tables for 1935 indicate only slight changes in net reproduction rates between the two periods. There is little consistency in the direction of the changes, except that net rates declined in the prefectures containing the cities of Tokyo, Yokohama, Osaka, Kyoto, Kobe, and Nagoya, and in the majority of the other urbanized prefectures.

This preliminary exploration of prefectural trends indicates that in the period studied declines in fertility and in mortality were practically balancing each other. If Japanese experience were to follow that of the West, accelerating declines in fertility would overtake declines in mortality to produce real declines in the rate of natural increase. The immediate effect of the war has been to quicken the decline in fertility and brake or reverse the decline in mortality.

Whether or not the future trends in fertility in Japan will represent an orderly continuation of those of the past or will deviate from them in as yet undetermined ways is an open question. Fertility differentials between rural and urban areas have long existed in Japan; they were well developed in 1920 and 1925. In the recent period, both total and marital fertility have declined in urban areas, and especially in cities of 100,000 and over. But in the rural areas there is little evidence of a decline in fertility beyond that produced by the decreasing prevalence of informal marriages and the increasing age at formal marriage. The decline in national fertility has been due predominantly to the increasing age at marriage, however defined, and to the increase in the proportion of the total population resident in large cities. It is difficult to predicate the continued

action of either of these two factors. The decline in the proportion married might extend into the age groups above twenty-five, and industrialization and urbanization might continue until Japan became an England. Barring these circumstances, the continued decline of fertility depends in large part on the diffusion of patterns of family limitation to that group which still constitutes the majority of the Japanese population, the inhabitants of the rural areas and the smaller towns and cities. A liberal regime, the elimination of the agrarian ideology and the feudal structure, socialized education, and the democratization of opportunity, if accompanied by rising levels of living, probably would produce rapid declines in age-specific fertility rates in both large cities and the rural areas. Whether or not these changes will occur in post-war Japan is a question to which demography has no answer.

CONCLUSIONS

This study of the dynamics of population in Japan is still too incomplete to permit other than tentative hypotheses as to the relations between industrialization, urbanization, population growth, and political stability within this Asiatic culture. The urbanization that has accompanied the economic transformation of Japan has been even more rapid than that which occurred in the West. The similarity to the West extends even to the patterns of age and sex selectivity and the influence of the distance factor in internal migration. Declines in both mortality and fertility have accompanied the urbanization and industrialization of the country, just as they did earlier in the nations of the West. The specific patterns of decline in mortality have been modified and the rate of decline blunted by the combination of low levels of living, long hours of work under unhealthful working conditions, the meagerness of the public health and welfare activities, and the diversion of the economic surpluses created by industrial expansion and technological advances to the noneconomic uses of imperialism and war. Fertility

has declined, but the rapidity of the decline has been braked by the maintenance of feudal agrarian conditions of living and thinking among the masses of the people.

The relation of population growth, political ideology, and war has not been considered specifically in this report. However, the factual data on internal redistribution of population within Japan have direct relevance to this problem. Japan's economic transformation has permitted the absorption of the natural increase of both cities and rural areas in the expanding industries and service occupations of the urban areas. The primary population problem of Japan is not that of areas of agricultural settlement for her rapidly increasing agricultural population. Rather, it is that of providing an expanding industrial economy with increasing numbers of job opportunities until such a time as the further diffusion of patterns of family limitation can eliminate the continued increase of persons in the productive ages. It is essentially a problem of access to markets and the creation of consumer purchasing power within the country through the democratization of the distribution system. Japan, like Germany, has used demographic arguments as the basis of political propaganda aimed directly toward national aggrandizement.

This analysis of the population history of Japan offers no basis for predicting the future population of any other region of Asia. If the demographic history of post-war China should duplicate that of Japan between 1870 and 1940, China would have a total population of approximately a billion people by the year 2,000. Only the naive could assume that the demographic history of China or any other Asiatic country would duplicate that of Japan. Whether or not the population of China, of India, or of Java will increase more or less rapidly with industrialization than did that of Japan will depend in the last analysis on nondemographic factors.

If industrialization is accompanied by the maintenance of order, increased food production, improved transportation, elementary public health activities, and the diffusion of knowledge on the basic

facts of sanitation and child care, the Malthusian controls of famine and disease will be eliminated and normal death rates will fall. Population growth will be rapid, just as it was at comparable periods of development in the nations of the West and in Japan. Fertility will decline as urbanization and its correlated habits of living and thinking affect increasing proportions of the total population, either directly through life in the cities or indirectly through processes of cultural diffusion.

Whether or not this hypothetical vital transformation can occur depends essentially on whether or not agricultural and industrial productivity can increase rapidly enough to provide minimum levels of living for the increasing populations. If such economic expansion proves impossible, mortality cannot decline.

The dynamics of fertility decline in Japan during the three-quarters of a century since the opening to the West offer little basis for optimism with reference to the possibilities of an early cessation to population growth in the overcrowded regions of Asia. It is true that fertility declined in Japan, but in 1935 fertility even in the large cities was very high in relation to that in the West. Fertility in the rural areas and the small towns had declined only slightly except as the increasing age of marriage and the decreasing prevalence of informal marriages had decreased the fertility of the younger women. The decline in national fertility that was producing the slackening rate of population growth for the nation as a whole was fundamentally a by-product of urbanization. If the same situation is to occur in the great overcrowded regions of the Asiatic mainland, the race between the expansion of economic opportunity and the accelerated population growth produced by mortality control would seem to be hopeless. The major demographic need of Asia thus becomes that of devising ways by which the rate of increase of the peasants can be controlled much more rapidly than it would be if reliance were placed solely on the slow processes of cultural diffusion from the cities to the countryside.