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This thesis submitted to the Faculty of the Graduate School
of the University of Maryland in partial fulfillment
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Master of Arts
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Thesis Advisor
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TABLE OF CONTENTS

Chapter	Page
I. PROBLEM AND METHODS OF ANALYSIS	1
A. The Problem.	1
B. Hypothesis.	4
C. Census Enumeration Methods.	5
D. The 1947 Japanese Census.	8
E. The 1950 Japanese Census.	9
F. Census Data and Its Treatment in Describing Migration	10
G. Statistical Methods Used.	13
II. INTRODUCTION.	15
A. The Japanese Nation	15
B. Japan's Population.	17
C. Economic and Industrial Development	20
D. Osaka Prefecture.	24
III. DISTANCE AS A FACTOR IN MIGRATION TO OSAKA PREFECTURE . . .	27
A. Hypotheses.	27
B. Definition of "Migrant"	29
C. Method for Measuring Distance	29
D. Analysis of Migration	31
E. Conclusions	41
IV. AN ESTIMATE OF NET MIGRATION TO OSAKA PREFECTURE:	
1947-1950	43
A. Hypothesis.	43

TABLE OF CONTENTS (continued)

Chapter	Page
B. Method Used for Estimate.	47
C. Method of Analysis.	47
D. Analysis of Migration	48
E. Conclusions	52
V. SUMMARY	53
APPENDIX	56
SELECTED BIBLIOGRAPHY.	63
IV. Degree of Mobility of the High Performance Contributing the Industry of Migration to Osaka Prefecture.	40
V. Age and Sex Distribution of Estimated Net Migration of Osaka Prefecture, 1947-1950	39
VI. Prefecture of Japan with Total 1370 Census Population, Number of Persons Born in Osaka Prefecture Resident in Osaka Prefecture in 1950, Out-Migration Rate to Osaka Prefecture, and Per Cent of Total Population Resident in Osaka (1950) in 1950.	37
VII. Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950.	35

LIST OF TABLES

Table	Page
I. Index of Industrial Production for All Japan.	23
II. Per Cent of Total and Male and Female Out-Migrants and Rate of Out-Migration to Osaka Prefecture by Distance Zones, 1950	33
III. Distance Zone and Degree of Urbanity of Those Prefectures Having the Highest Out-Migration Rate in Each Zone. . . .	40
IV. Degree of Urbanity of the Eight Prefectures Contributing the Majority of Migrants to Osaka Prefecture.	40
V. Age and Sex Distribution of Estimated Net Migration of Osaka Prefecture, 1947-1950	49
VI. Prefectures of Japan with Total 1950 Census Population, Number of Persons Born in These Prefectures Resident in Osaka Prefecture in 1950, Out-Migration Rates to Osaka Prefecture, and Per Cent of Total Population Resident in Cities (<u>Shi</u>) in 1950.	57
VII. Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950.	59

LIST OF FIGURES

Figure		Page
1.	Map of Japan Showing Prefectural Boundaries and Distance Zones.	30
2.	Out-Migration Rates and Per Cent Distribution of Migrants to Osaka Prefecture by Distance Zones.	36

This movement, or migration, may be of many types, and when it is the object of study the nature should be specifically defined. The broad categories of migration are generally accepted. These are international and internal migration. International migration is that movement in which persons cross national boundaries. Internal migration refers to the movement of persons within a given nation. In referring to international migrants the term "immigrant" is applied to a person entering a nation, and "emigrant" to a person leaving a nation. The corresponding terms used in referring to persons engaged in internal migration are "in-migrant" and "out-migrant."

Of all movements of peoples it is probably internal migration which holds the greatest interest to the student of human geography. It is the most responsive to social and economic influences. Available data give proof that the volume of internal migration is very great in all economically advanced countries. It usually far exceeds the amount of

CHAPTER I

PROBLEM AND METHODS OF ANALYSIS

The Problem

The vast majority of mankind spend their lives as members of a number of more or less intimate social groups. Since times past increasing numbers of persons have left their families and neighborhoods and gone forth, usually in search of some larger economic opportunity.

This movement, or migration, may be of many types, and when it is the object of study its nature should be specifically defined. Two broad categories of migration are generally accepted. These are international and internal migration. International migration is that movement in which persons cross national boundaries. Internal migration refers to the movements of persons within a given nation. In referring to international migrants the term "immigrant" is applied to a person entering a nation, and "emigrant" to a person leaving a nation. The corresponding terms used in referring to persons engaged in internal migration are "in-migrant" and "out-migrant."¹

Of all movements of peoples it is probably internal migration which is the most responsive to social and economic influences. Available data show that the volume of internal migration is very great in all economically advanced countries. It usually far exceeds the amount of

¹Mortimer Spiegelman, Introduction to Demography (Chicago: The Society of Actuaries, 1955) p. 187.

international migration.² This migration may take many forms. It may mean movement from one region of a country to another, movement from rural to urban or urban to rural areas, migration from city to city, or any of the many possible changes in the geographic location of persons.

Internal migration has had varying effects on the growth and composition of the population of the areas involved. There may be an increase of population in an area, directly, as the result of in-migration, or indirectly, through an increase of fertility rates as a result of in-migration or the lessening of economic pressures through out-migration. There may be a decrease in population as a result of out-migration or through the lowering of fertility rates as a result of the instability or other characteristics of in-migrants.

As an example of the ability of migration to increase populations, rural-urban migration has been significant in more recent times. In all countries where there has been a rapid expansion of industry and commerce there has been considerable migration from rural areas to the cities. This has resulted in the direct increase of the urban populations through migration and has generally meant an increase of fertility rates through the influence of recent rural in-migrants. At the same time, of course, these rural areas which have contributed migrants have often served as examples of the reductive effects of migration upon population.³

²United Nations, The Determinants and Consequences of Population Trends (Population Studies No. 75, New York: United Nations, 1953), pp. 106-107.

³Dorothy S. Thomas, Social and Economic Aspects of Swedish Population Movements 1750-1933 (New York: The Macmillan Company, 1941), pp. 260-265, 280-283; R. P. Dore, "Japanese Rural Fertility; Some Social and Economic Factors," Population Studies, 7:62-64, June 1949; Ayanori Okasaki, A Fertility Survey in Japan of 1952, Japan Ministry of Welfare (Tokyo: Institute of Population Problems, 1953), pp. 12, 48-50; United Nations, The Determinants and Consequences of Population Trends, op. cit., p. 109.

The composition of the population of both the place of origin and of destination is decidedly affected by migration. For example, demographic studies have shown that migrants tend to belong to certain age and sex groups, and the loss or gain of these groups has a definite effect on the population involved in migration.⁴

Migration means more than just the shifting of population, and the equalizing of population pressures with economic resources. It is frequently a disruptive force in the life of the migrant as he moves from one social world to another. In general, the greater the distance the migrants have traveled, the greater their problems seem to be in severing relationships with their group of origin, and in making personal and community adjustments in the place of destination.⁵

For this study an area of Japan, Osaka Prefecture, has been chosen as a focus for the investigation of certain aspects of internal migration.⁶ Japan is an Asian country which has been, and is, going through the transition from a feudal, agrarian society to an industrialized society with a centralized political organization. This is a transition already made by many western nations. However, it has still to be ascertained as to whether this process has produced in Japan, with its peculiar culture, those same patterns of internal migration which have been found in western cultures.

⁴Dorothy S. Thomas, Research Memorandum on Migration Differentials, (Bulletin No. 43, New York: Social Science Research Council, 1938), pp. 162-163.

⁵Warren S. Thompson, Research Memorandum on Internal Migration in the Depression (Bulletin No. 30, New York: Social Science Research Council, 1937), p. 11.

⁶Reasons for the choice of Osaka Prefecture will be given in Chapter II.

While there have been recent studies of the demography of Japan, there has been a lack of detailed studies of specific areas. This is especially true when one thinks in terms of studies by Western demographers or of studies relating the findings of Western demography to the results of Japanese demographic studies.⁷

It has been attempted in this study of internal migration, to Osaka Prefecture Japan, to determine what are some of the more significant variables involved in Japanese internal migration. It is hoped that in isolating these variables this work will in some part aid in the understanding of their function, and their effect on, and interrelationships with, other known variables which are essentially non-demographic in nature. In doing this it is further hoped that this study will in this way aid in the understanding of the Japanese population and the development of Japan as a mature industrial nation.

Hypotheses

Western demographic studies, both recent and past, have demonstrated the existence of the following relationships within Western civilization:

1. The ability of an area to attract migrants decreases as the distance from that area increases.
2. As the distance from an area increases, it exerts more or less attractive force upon migrants of one sex than upon migrants of the other sex.
3. There is a definite tendency for a larger proportion of migrants to be found in young adult age groups than in other age groups.
4. These factors are interrelated.

It is proposed that these phenomena will be found to be operative in Japan, for not only does she have a transitional society, as previously

⁷Irene B. Taeuber, "Demographic Research in Japan," Pacific Affairs, 22:393, December 1949.

mentioned, but effects of the recent World War and its aftermath have probably served to intensify the expected developments. More adequate discussion of these relationships is reserved for those sections of the study dealing with specific aspects of the problem.

Census Enumeration Methods

The primary sources of data for this study were the Japanese Population Census of 1950, and the Population Census of 1947. The general census method of population enumeration is rather well defined in the following quote from Spiegelman's Introduction to Demography.

A census is an enumeration at a specific time of individuals comprising the population within a specific area, at which time particulars are collected regarding age, sex, and certain social, economic,⁸ ethnic, familial, and sometimes physical characteristics.

A census may be taken by one of two methods, de facto or de jure. In a de facto census each person is recorded as belonging to, or residing at, the place where he was counted. In a de jure census each individual, regardless of where counted, is assigned to his usual place of residence. This means that on a de jure basis a listing of the members of a household would include those actually present at the time of the census and also those who are temporarily absent. This also means that those temporarily living in an area who usually reside in another place will be counted as residing in the latter.

Experience in the United States has shown that one of the disadvantages of the de jure system is a possible under-enumeration. This results from a failure to definitely fix the usual place of residence. An example of this is the under-enumeration of young adult males in the 1940

⁸Spiegelman, op. cit., p. 5.

census. This occurred at the end of the depression when many young men were seeking work away from home. Their families failed to include them when reporting to the enumerator, and they themselves were difficult to contact because of their migratoriness. In addition to faults in actual enumeration it is likely that information which is secured concerning persons who are temporarily absent is incomplete or incorrect.⁹

There are several advantages of the de jure method. If the enumeration is to be spread over a considerable time interval a de jure enumeration may give more accurate results than a de facto one. Local requirements in connection with certain social services such as housing and education programs, which apply only to the resident population are better fulfilled by de jure figures than by de facto figures. The latter is true because a de jure enumeration should give a relatively accurate picture of the permanent population of the area described in the count. Temporary mobility due to holidays, vacations, temporary job assignments, and the like are discounted.¹⁰

This latter advantage becomes the disadvantage of the de facto method as it provides an incorrect picture of the usual population of the area covered by the census. Another disadvantage is that it is difficult to obtain information concerning persons in transit. A de facto census may also lead to a distorted interpretation of vital statistics since these are not related to the de facto population base. However, it may be possible in the final tabulations to allocate non-residents to their usual place of residence and thus obtain a population base which

⁹Daniel O. Price, "A Check on Underenumeration in the 1940 Census," American Sociological Review, 12:49, February 1947.

¹⁰United Nations, Population Census Methods (Population Studies No. 4, New York: United Nations, 1949), p. 8.

may be of use in interpreting vital statistics. In addition, the de facto method of census-taking entails possible under-enumeration by failing to personally count the migrant and by ruling out of his being enumerated via an informer at his usual place of residence.¹¹

The primary advantages of a de facto enumeration are simplicity and objectivity of definition. Also, the de facto figures are more suitable for comparison between different countries. The method of enumeration used in many countries would permit the derivation of both de facto and de jure population figures. The best method of this type is to enumerate at each dwelling both the persons who usually reside there but are temporarily away, and those who are present but have a usual place of residence elsewhere.¹²

There are two procedures which may be used in taking the actual census count. The first is the canvasser method. In using this method trained, paid enumerators go from household to household obtaining the desired information by questioning each person or head of household. The second procedure is the self-enumeration or householder method.

When the self-enumeration method is used census schedules are handed out in advance to heads of households to be completed as of the census date. The returns gotten by the latter method may be reviewed, corrected and completed by the census representatives who collect them from the household. Since the responsibility of completing the return falls upon the household, the questions asked must be relatively few and simple. Even so the reliability of the information given may be dependent upon

¹¹Spiegelman, op. cit., p. 10.

¹²United Nations, Population Census Methods, op. cit., p. 9.

the attitude of the household toward the census. There is the advantage with this method that there is ample time to fill in the details of the schedule. Also, there is less chance of persons who are temporarily absent from the household being omitted.

By the direct interview method it is generally possible to gain more accurate information. This is possible because enumerators can be trained to secure more reliable answers to relatively elaborate questions. The results obtained will be fairly uniform in quality. However, the training of the enumerator is costly and, as in the case of the householder, the reliability of the data obtained may depend in part on the attitude toward the census.¹³

Although Japanese census statistics are not without their deficiencies, the material they present often surpasses that of the West. The completeness of the enumerations and the accuracy of the age distributions in the censuses of Japan proper are worthy of note. This suggests that insofar as data is concerned a more fruitful field is offered for the statistician in a strongly disciplined state than in a less tightly organized one.¹⁴

The 1947 Japanese Census

The Population Census of Japan 1947 was conducted as of 1 October 1947. Persons were enumerated at the place or in the household where they actually were at the time of the census. Thus, this census was conducted on a de facto basis. Persons who were engaged in night work or were travelling or in a place where there was no household at the census

¹³Spiegelman, op. cit., pp. 10-11.

¹⁴Taeuber, "Demographic Research in Japan," op. cit., p. 396.

hour were considered to be in the household where they arrived first after 0001 hours, 1 October. Persons, such as vagrants, who had no domicile were enumerated in the place where they were found at the time of the enumeration. The enumeration included only persons actually in Japan proper.¹⁵

The householder or self-enumeration method was used in conducting this census. An individual schedule was used for each person rather than a household schedule for all members of the household as had been used in previous censuses. Any necessary corrections were made by the enumerator at the time of collection.

Adjustments were made in the 1947 census both for general under-enumeration and for under-enumeration in certain areas due to floodings. The adjustment for general under-enumeration could not be distributed by area. There was no need for adjustment for under-enumeration due to flooding in Osaka Prefecture. Therefore any adjustments made do not affect the data from the 1947 census used for this study.¹⁶

The 1950 Japanese Census

The Population Census of Japan 1950 was conducted as of 1 October 1950. The actual enumeration was conducted during the period 1-3 October. Persons were enumerated as of their place of usual residence. Persons who had no usual place of residence were enumerated at the places where they stayed on 1 October 1950. This was the first regular census on a de jure basis. The census included only persons who were in Japan proper.

¹⁵ Japan: Office of the Prime Minister, Summary Report, Population Census of Japan 1947 (Tokyo: Bureau of Statistics, 1949), p. 2.

¹⁶ Ibid., p. 6.

Enumerators used the Main Census Schedules for enumerating persons in their usual place of residence and the Temporary Resident Schedules for enumerating temporarily absent persons. The enumeration depended upon the interview system. Each enumerator visited every household in his district to interview the head or representative of each household, and the enumerator himself recorded the information on the schedules. Thus, the method of taking the census was the canvasser method.

There were no adjustments for under-enumeration in the 1950 census.¹⁷

As mentioned in the discussion of the 1947 Japanese census, that census was a de facto census. The census in 1950 was a de jure census. However, de facto figures for the total population are also published for 1950. Since in Osaka Prefecture the difference between these figures was only a matter of .1 per cent, with the de jure figure being the larger,¹⁸ it was not felt that this difference was particularly detrimental to this study of migration.

Census Data and Its Treatment in Describing Migration

The 1950 census of population contains data on the prefecture of birth of the 1950 residents of Osaka Prefecture.¹⁹ From this data the exact prefecture of origin and total number of migrants were ascertained. These were used in measuring the extent of the out-migration from other prefectures which became in-migration to Osaka Prefecture.

¹⁷Japan: Office of the Prime Minister, Population Census of Japan 1950 (Tokyo: Bureau of Statistics, 1952, vol. 1, p. 18).

¹⁸This is in opposition to what would be expected from U. S. data and may be due to stronger familial ties and thus more adequate reporting of persons temporarily absent.

¹⁹Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 7, part 27, Table 15.

The first measure used was an out-migration rate. This rate expressed the extent of the attractive force exerted by the prefecture of destination upon the prefecture of origin. The rate was expressed as the number of migrants per 1,000 population of origin who out-migrated from the prefecture of origin. For the population of the prefecture of origin the 1950 census population was used.

The second measure used was the relative proportion of total migrants contributed by each area of origin. This was expressed as the percentage of total migrants formed by the migrants from each area studied.

Data from the two censuses were jointly treated to yield the net migration to Osaka Prefecture during the three year period 1947-1950. Briefly, balances were struck between certain age groups of the 1947 and 1950 population for each sex. These were compared to the estimated number of survivors that the 1947 population would yield if subject to the age-specific death rates current in Japan in 1947. The balance of the comparison was assumed to be the net number of migrants received by Osaka Prefecture in the three year period.

The 1947 population, by sex and single year of age, was obtained from the reports of the 1947 population census.²⁰ For 1950 the census population by sex and single year of age was taken from the published volumes of the 1950 census of population.²¹

²⁰Japan: Office of the Prime Minister, Reports of 1947 Population Census; No. 7 Population by Age (Tokyo: Bureau of Statistics, 1949), pp. 164-165.

²¹Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 7, part 27, Table 2, pp. 45-46.

Three year age and sex specific survival coefficients were computed on the basis of data given in a Life Table (1947) for all Japan.²² This was a life table constructed by using the 1947 Census of Population and 1947 Vital Statistics. Before computing the survival coefficients it was necessary to take the Life Table Population given for each sex and year of age, add this to the Life Table Population one year older, and halve the result in order to obtain the Midpoint Life Table Stationary Population. This midpoint population was then used in computing the necessary survival coefficients.

Since net migration was to be estimated for a period of three years, 1947 to 1950, three year age and sex specific survival coefficients were computed. This was done by taking the midpoint population for each year of age, by sex (beginning with age three), and dividing this by the midpoint population three years younger. The result was a coefficient which indicated the percentage of the younger age group which could be expected to be found surviving in a group three years older at the end of the three year period.²³

The coefficients were then applied to each year of age, by sex, of the 1947 census population to gain an estimate of the population in the appropriate age group which could be expected to have survived in 1950. This expected population was then subtracted from the 1950 census population, by sex and single year of age, and the result attributed to migration.²⁴

²²Japan Statistical Association, Japan Statistical Yearbook 1950 (Tokyo: Japan Statistical Association, 1950), Table 16, pp. 30-31.

²³A. J. Jaffee, Handbook of Statistical Methods for Demographers (Washington, D.C.: U.S. Govt. Printing Office, 1951), p. 6. The method discussed by Jaffee is comparable to that used here, although for a different time period.

²⁴Ibid., p. 185.

There are several weaknesses, or sources of error, inherent in the application of this method to these data. To begin with, since a 1947 Life Table was used in computing survival coefficients this assumes that the death experience for the three years 1947-50 was unchanging during these three years. It is possible that too high a mortality rate is thus assumed for the period studied, for this was a period of gradually decreasing death rates in Japan. An alternative would have been to use a 1950 Life Table based on the 1950 Census and 1950-51 Vital Statistics. This would have been likely to cause even more error, in the direction of assuming too low a death rate. It is possible that the truest estimate of survivors would have been obtained through a method using vital statistics rates for 1947-50.

There is also the possibility that the assumed balance was not entirely the result of migration but was partially the result of under-enumeration which was present in the 1947 census but not in the 1950 census. However, some indication of the extent of in-migration to Osaka Prefecture is given by the place of birth data, and this is of aid in interpreting the validity of the estimate of net migration.

Statistical Methods Used

To aid in the more meaningful interpretation of the migration data analyzed in this study, statistical methods have been employed. In dealing with both the prefecture of birth data and the data obtained through the estimate of net migration descriptive statistics only have been used.

Certain conditions attendant to the data ruled out the use of a more sophisticated statistical analysis. The prefecture of birth data, as given, represented the total universe to be studied, so that there was no use for inductive statistics, which generalize to a larger

hypothetical universe.²⁵ Also, in the case of none of the data was random sampling technique used. This, too, made it unnecessary to use inductive statistics.²⁶

Some aspects of methodology are more closely interrelated with the data itself than those dealt with in this section on methodology. These aspects will be discussed in the several chapters dealing with particular analyses of migration.

²⁵Japan: Office of the Prime Minister, *Formulation Scheme of 1950*, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

²⁶Margaret Jarman Hagood, *Statistics for Sociologists* (New York: Henry Holt and Company, 1952), p. 192.

²⁷*Ibid.*, p. 219.

CHAPTER II

INTRODUCTION

The Japanese Nation

Japan is a nation consisting of the four main islands of Honchu, Hokkaido, Kyushu, and Shikoku, plus numerous small islands. It had a total land area of approximately 147,000 square miles as of 1950.¹ The coast line is very broken and of great length in proportion to the land area, the ratio being approximately one mile of coast to every nine and one-half square miles of area. The islands are very mountainous, and the soil is mainly lava, volcanic ash, and sand. Approximately 15 per cent of the land is cultivated.² Japan is well watered, though the rivers are not navigable. The climate is humid--the result of conditions produced by the ocean currents surrounding the islands and by the forests, carefully maintained through traditional policy.

For administrative purposes the country is divided into forty-six prefectures. The names of forty-two carry the suffix ken and the other four are known as to, do or fu. Each prefecture in turn is further subdivided into shi (cities) and gun (counties). The gun in turn is divided into machi or cho (towns) and mura or son (villages).³

¹Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 1, p. 20.

²Information Section of the Embassy of Japan, Japan Information (Washington, D.C.: Embassy of Japan, 1954), vol. 1, No. 6, p. 1.

³Japan: Office of the Prime Minister, Population Census of 1950, loc. cit.

Although shi, machi and mura, in the order named, tend to diminish in size of population, there is no definite break in size between them. Shi usually contain a clustered population of at least 30,000 or more, but not all shi are that large and not all areas having a population of 30,000 or more are officially designated as shi. In nearly all cases machi and mura contain more than one population cluster as well as open populated country. In general a machi contains one fairly large population cluster and several other smaller clusters as well as some open country, whereas a mura usually contains only small clusters and some open country.⁴ Until 1926 gun were political subdivisions of prefectures. They were then abolished as a political division, thus placing mura directly under the prefectural government.

There still remains the geographical and social county. People are conscious and proud of the county to which they belong and many organizations have been developed on a county-wide basis.

The next political subdivision below the prefecture is the mura. This is not, however, the cluster of farmhouses ordinarily meant by the term village. A mura consists of several such house clusters, each united geographically and socially in its own little organization. These separate social units are known officially as buraku and have a common village office, headman, and shinto shrine.⁵

The six largest cities of Japan--Tokyo, Osaka, Kyoto, Nagoya, Yokohama, and Kobe--are subdivided into ku or wards. All of these are incorporated as shi except Tokyo for which the separate shi incorporation was abolished in 1943 and Tokyo-fu was redesignated as Tokyo-to.

⁴Ibid.

⁵John F. Embree, Suye Mura, A Japanese Village (Chicago: University of Chicago Press, 1939), p. 22.

Japan's Population

According to the Census of Population 1950 the total Japanese population numbered 83,199,637. This results in a population density of nearly 600 persons per square mile. The total population represents a 50 per cent increase over the population enumerated in the first census, taken in 1920. Natural increase has been the primary factor in this growth. Since 1945 the decline in the mortality rate has been of particular importance in stimulating natural increase.⁶

The urban population of Japan is generally considered to be the total population living in shi areas and the rural population as that living in gun areas. The numerical size of shi population may somewhat mislead those who are familiar only with the urban population definition used in the United States census.

These urban populations are not directly comparable as shown by the following quotation from "Some Social Factors Bearing upon Japanese Population" by John C. Pelzel:

The best figures that I have been able to obtain for the postwar period show that as many as 84 per cent of all industrial establishments are plants employing five workers or fewer, and this is approximately the situation that obtained also before the war. Such small shops are in a very large part, it appears, single family plants. Though I have no comparable figures for commerce, the over-whelming number of single-family stores one sees would argue that the same situation is found there.

In this industry, in the experience of either worker or enterpriser, the line between urban and rural life, between farming and modern industry, is often not sharp. . . . Rapid transportation facilities are well developed throughout most of the small country and many farmers regularly migrate to the city factory during the slack season. A considerable part of the urban industrial labor force is made up of people

⁶Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 1, p. 21.

who live at home on the farm at least part of the time, but commute daily to city factories for work. These ties with the village are marked among laborers, but they are perhaps as typical of enterprisers as well. In recent decades, greater economic opportunity has allowed a multitude of small enterprisers to get a start, and they are drawn in considerable part from the farm, often remaining very nearly as closely bound to it, and to the ancestral family there, as their workers.⁷

The author goes on to say, however, that this does not mean that there have not been marked social changes concurrent with urbanization and industrialization. These changes are well evidenced by such factors as lowered birth rates and smaller size of families.

But care must be exercised not to sharply delineate, as urban and rural, with all their attendant social connotations, the population resident and not resident in shi and gun.

In 1950 the shi population constituted 37.5 per cent of the total population whereas in 1920 those residing in shi had formed only 18 per cent of the total. Thus, in 30 years the percentage of the total population in shi doubled, and the number of persons living in shi more than tripled. The number of places classified as shi increased from 81 in 1920 to 248 in 1950. The only significant reversal in this trend occurred in the period 1944-45 when migration to rural areas because of bombing of urban centers reduced the percentage of population living in shi areas from 41 to 28 per cent. However, after the war the trend toward urbanization was resumed. By October 1950 the population living in shi amounted to 37.5 per cent of the total population.⁸

⁷John C. Pelzel, "Some Social Factors Bearing upon Japanese Population," American Sociological Review, 15:21, February, 1950.

⁸Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 1, p. 23.

While the percentage of total population living in shi areas steadily increased from 1920 to 1950 the population density in shi areas declined steadily from 19,048 per square mile in 1920 to 5,598 persons per square mile in 1944. This dropped sharply to 3,684 per square mile in 1945, but increased slightly to 4,092 per square mile in 1950.

It is probable that the apparent decline in the density of population living in shi actually reflects the relatively large increase in shi areas. Many comparatively sparsely populated small and medium shi were established, and many of the old established shi extended their limits to include less densely populated machi and mura. The population living in shi areas tripled from 1920 to 1950 as did the number of places classified as shi, but the present area of shi is more than fourteen times the area of shi in 1920.⁹

On the other hand the population density of gun areas fluctuated only slightly, from 312 to 315 per square mile during the period 1920 to 1940. It dropped to 302 per square mile in 1944 but rose to 382 in 1945 when many persons left the cities. A short period after the war people returned to the cities and this resulted in a slight drop in population density of gun areas. However, this drop was arrested by the return of demobilized soldiers and other repatriates who brought the gun population to a new high in 1947. This growth and the further transfer of land area from gun to shi resulted in an all-time high of 387 persons per square mile in 1950.¹⁰

According to the 1950 census nearly 30 per cent of the population lived in six prefectures. Tokyo-to accounted for 7.5 per cent of the

⁹Ibid., p. 24.

¹⁰Ibid.

total population, followed by Hokkaido with 5.2 per cent of the total, and Osaka-fu, Fukuoko-ken, Aichi-ken and Hyogo-ken with 4.6, 4.2, 4.1, and 4.0 per cents, respectively, of the total population. All of these prefectures except Hokkaido lie in the upper one-fourth of all prefectures ranked according to per cent of population resident in shi. Thus the resulting high density of population in these areas is probably the reason for their relatively large contributions to the total population.¹¹ The reason for Hokkaido being in this group probably lies in the fact that it is the largest prefecture in size and consists of five times as much land area as the next largest prefecture.¹²

Economic and Industrial Development

The basis of the early Japanese feudal economy was, naturally enough, agriculture. Since rice was, as it is now, the principle food, the entire economy was orientated around its cultivation. Like the West, although somewhat later, Japan experienced a commercial and industrial revolution.

In Japan the commercial revolution, the development of a monetary economy, and the organization of handicraft manufacturing began in the late eighteenth and early nineteenth centuries. As Japan came into greater contact with the West, it began a planned industrial transformation that involved a selective imitation of the West. It appears in retrospect that the Japanese movements were orientated toward the achievement of power through science and technology, without such

¹¹Ibid., Table 9, p. 44.

¹²Japan Statistical Association, Japan Statistical Yearbook 1950, op. cit., Table 1, p. 1.

alterations in social structure as would forfeit the specifically Japanese aspects of Japanese culture.¹³

Although there were wealthy families in feudal Japan, their wealth was locked up in land or in internal trade and there was no way of assembling the large amounts of private capital necessary for the establishment of modern industry. Moreover, these families did not have the skill and knowledge necessary for the successful establishment of such enterprises. They were willing, though, to loan to the government such money as might be necessary for carrying out these developments. In this way modern industry first came to Japan by way of government ownership.

By 1880 a number of the industries established by the government were operating successfully. It was then decided that the time had come to turn these industries over to private ownership. In the next twelve years most of the state factories were sold. The chief industries sold by the state between 1880 and 1893 were textiles, shipbuilding, cement plants, match factories, gasworks, and brickyards. Textiles were by far the most important.¹⁴

Factories and workshops in general increased at the rate of 100 to 300 units per year from the last of the nineteenth century to the 1920's. The industries which created the greatest demand for labor were those producing foreign type products and using Western technology--such as railways, cotton spinning, paper making, sugar refining, and

¹³Irene B. Taueber, "Family, Migration, and Industrialization in Japan," American Sociological Review, 16:150, April, 1951.

¹⁴Warren S. Thompson, Population and Peace in the Pacific (Chicago: University of Chicago Press, 1946), p. 135.

shipbuilding. Indigenous industries, such as the silk industry, were next in importance as labor users. It was necessary first to convert them from farmer-domestic methods to the factory system in order to meet the increased demand of foreign markets. In spite of these increases, however, by 1930 less than one-fifth of the employed population was engaged in manufacturing (including construction). Nearly half of this population was engaged in agriculture.¹⁵

During the 1930's there was a relative decline in the importance of textiles, which had been so significant in the 1920's. With mounting emphasis upon military needs, the metal, engineering and chemical groups were expanded. Together these groups increased their proportion of the total labor force from a little more than one-quarter to nearly two-fifths. Figures for volume of total output show that from 1929 to 1936 production of pig iron nearly doubled while raw steel production more than doubled. The chemical industry and machinery and instrument trades showed a great increase in production and expansion in variety of products.¹⁶

This changing composition of Japanese industry is well illustrated by the fact that by 1939 the textile industry accounted for only 20 per cent of total industrial output as against 40 per cent in 1931. At this same time the metal and machinery industries had increased their output about ten times over what it had been in 1931. The chemical industry alone accounted for about 20 per cent of the total industrial output.¹⁷

¹⁵George C. Allen, Economic History of Modern Japan (London: George Allen and Unwin Ltd., 1946), p. 108.

¹⁶Ibid., p. 138.

¹⁷Thomas A. Bisson, Japan's War Economy (New York: Institute of Pacific Relations, 1945), pp. 199-200.

The most decisive changes in the composition of Japan's industry occurred in 1943-45. During this period the Munitions Company Act was passed. Through its provisions a total mobilization of economic resources was effected. By the close of 1944 the output of light industry was reduced to a minor segment of industrial production, and the basic metals industries were the dominant feature of Japan's economy. This is evidenced by the fact that heavy industry accounted for more than four-fifths of Japan's total industrial output in 1944-45.

The destruction of industrial facilities along with the heavy damage done to houses, roads and public utilities as a result of the war hampered the speedy post-war recovery of Japanese industry. Nevertheless, Japanese industry did manage to effect substantial recovery as indicated by the following table of indices of industrial production. This index is based on data related to the production of 69 items belonging to 10 industries, which were obtained chiefly from current statistics surveys on production, taking 1932-1936 as the base period.

TABLE I. INDEX OF INDUSTRIAL PRODUCTION FOR ALL JAPAN*

Year	Index
1932-36	100.0
1946	48.6
1947	57.1
1948	74.1
1949	93.5
1950	112.2

*Japan Statistical Association, Japan Statistical Yearbook, op. cit., 1951, p. 130.

However, these indices may be misleading as to the condition of Japan's economy at this time. The shrinkage of the domestic market and the lack of demand from abroad brought about a diminution of total demand. The increase of production together with this dwindling of demand caused a considerable surplus of production. The cumulative effects of

this were felt in the labor market with a sudden curtailment of employment at the end of 1950.¹⁸

Japan in the 20th century is a nation bound up in the movement from agrarianism to industrialism. Incident to this is, logically, the mass relocation of population; the movement from the rural to the urban community and from the areas without resources to areas more adequately endowed. The second World War provided a major impetus to this change. As will be discussed later in a more suitable place, wartime measures for deploying the population brought about little change in the location of existing urban centers.

Japan is, therefore, an excellent laboratory for the study of internal migration. The remainder of this chapter will be devoted to the documentation of the suitability of Osaka Prefecture as a microcosm of study of Japanese internal migration.

Osaka Prefecture

Osaka Prefecture is formed primarily by a broad plain known as the Settsu Plain in the southern part of the main island (Honchu) of Japan. It is bordered on the east by Osaka Bay and level plains form its other borders.

A highly concentrated manufacturing area is found at the eastern end of the inland sea of which Osaka Bay is a part. Since there is no coal or notable raw materials in the Osaka area, two of the most important advantages for manufacturing are absent. Also, since the Osaka area is not near any principal center of hydroelectric development, it depends to a greater extent, directly or indirectly, on coal.

¹⁸Daily Labor Press, Inc., The Labor Union Movement in Postwar Japan (Tokyo: The Daily Labor Press, Inc., 1954), p. 26.

However, there are several factors favoring the centering of industry in the Osaka area which far outweigh its disadvantages.

The broad level expanse of land formed by the Settsu Plain provides room for city growth and industrial expansion. In addition, there are very adequate facilities for internal and external water transport which facilitates the economical transportation of bulky goods. Finally, there is a large supply of available labor and capital.

The city of Osaka, Japan's most highly industrialized great city, forms the principal unit of this great industrial concentration. The city is the hub of a widespread rail net which stretches out to a number of lesser cities and towns. To the south of Osaka, along the coast, are Sakai and Kishiwada. Bordering Osaka on its land side are the industrial centers of Fuse, Suita and Toyonaka.¹⁹

Until the 1930's the satellite cities and towns specialized in the lighter industries, especially textiles, and in goods for sale in the home market. However, in these cities, as in Osaka itself, there has been a gradual increase in the importance of heavy industries.²⁰

The importance, and recovery, of industry in Osaka Prefecture since the war is indicated by the number of manufacturing establishments employing five persons or more. For the prefecture these numbered only 5,374 in 1945. However, by 1948 these had increased to 9,339, and to 10,019 by 1949. By 1950 these establishments totaled 14,272 for the prefecture.²¹

¹⁹Glenn Thomas Trewartha, Japan: A Physical, Cultural and Regional Geography (Madison: The University of Wisconsin Press, 1945), pp. 528-529.

²⁰Ibid.

²¹Japan Statistical Association, Japan Statistical Yearbook, op. cit., 1952, p. 167.

Osaka Prefecture, probably the most highly industrialized and urbanized prefecture in Japan, had over a 10 per cent quinquennial increase in population from 1920 to 1940. From 1940 to 1945 the prefecture experienced over a 40 per cent decrease in population, and then from 1945 to 1950 there was more than a 35 per cent increase.²²

The steady increase in population from 1920 to 1940 is what would normally be expected of an area experiencing the increasing industrialization and urbanization in process throughout Osaka Prefecture. The decline in population from 1940 to 1945 is typical of what occurred in most large urban centers of Japan where the population moved to rural areas to escape bombing and other wartime discomforts. The increase from 1945 to 1950 is to be expected as a result of the re-awakening economic activity taking place in Osaka during this time.

In view of the latter two changes noted, the significant decrease in population 1940-1945, and the almost equally significant increase for 1945 to 1950, there is justification for selecting Osaka Prefecture for the years 1947 to 1950 as a significant object of study.

In summary, Osaka, Japan in the years 1947-1950 is a place and a time in which migrants have fulfilled a sufficiently important role in the total life of a Japanese community to warrant a study of them. This study is an attempt to determine some of their essential characteristics, and to gain, if possible, a more complete understanding of Japanese society. This understanding should be comparable to that afforded by the study of internal migration in the United States.

²²Japan: Office of the Prime Minister, Population Census of 1950, op. cit., vol. 1, Table 8, p. 42.

CHAPTER III

DISTANCE AS A FACTOR IN MIGRATION

TO OSAKA PREFECTURE

Hypotheses

In respect to distance and migration two interrelated hypotheses were examined in this study. These were:

1. The farther the place of origin of migrants is from the place of destination, the less attractive force that place of destination has upon the migrants.
2. The farther the place of origin is from the place of destination the more likely it is that proportionately more migrants will be of one sex.

Demographic studies in general tend to support the proposition that there is a definite inverse relationship between the distance to be traveled and the rate of migration to, or out of, an area. In most cases these findings are given with some qualifications, such as the following, in a quotation from the article, "Migration and Distance," by Donald J. Bogue and Warren S. Thompson in the American Sociological

Review:

The evidence which has been assembled here indicates that there is a close inverse relationship between the distance to be traveled and the rate of migration out of an area. This relationship is not invariant, however, and distance must be accepted as being only one of several possible variables which condition the rate of departure from any community. Urban communities both send and receive a higher proportion of long distance migrants than do rural communities. It is also probably true that distance is less of a barrier to the migration of urban population than it is to the migration of rural population. The redistribution of population between urban and rural communities is accomplished primarily by short distance migration which is a very large proportion of all migration. There are consistent sex and color differentials associated with the distances which migrants travel:

Distance is less restrictive of migration for males than for females. . . . However, these differentials between urban and rural communities, between the sexes. . . , are only minor variations in the general principle that the attractive "pull" or expulsive "push" upon the population exposed to migration tends to decrease with increasing distance.¹

Further support for these hypotheses is found in Dorothy S. Thomas' Research Memorandum on Migration Differentials, where, in the discussion of the effect of environmental factors upon observed migration differentials, the author says, "the distances between migration origin and destination have had profound effects upon migration volume. . . ."²

In regard to the sex selectivity of migration distance Thomas says:

These curves (sex ratios of rural-urban migrants in Sweden 1930) also suggest how distance may operate as a limiting factor in sex selection. In rural areas, the sex ratio was lower for the farther migrants in all the young adult years than for the nearer migrants, and this differential is apparent whether migration is defined in terms of birthplace and residence or in terms of recent in-migration. In other words in-migration to rural areas is more strongly selective of females from far than from near distances. Migration into towns is less strongly selective of females from far than from near distances.

The findings of a number of articles mentioned throughout Thomas' work emphasize even more the influence of distance on migration. Two of these, quoted below, will serve to amply illustrate this point.

With regard to distance of migration it was found at the time of the survey 30% of the migrants were within 10 miles of the parental home; 65% within 25 miles; and 80% within 50 miles.⁴

¹Donald J. Bogue and Warren S. Thompson, "Migration and Distance," American Sociological Review, 14:243-244, April, 1949.

²Dorothy S. Thomas, Research Memorandum on Migration Differentials, op. cit., p. 162.

³Ibid., p. 65.

⁴Dorothy S. Thomas, Research Memorandum on Migration Differentials (New York: Social Science Research Council, 1938), p. 177, citing W. A. Anderson and C. P. Loomis, Migration Among Sons and Daughters of White Farmers in Wake County, North Carolina, 1929, p. 9.

Classification by zones of last residence shows the usual preponderance of migrants from nearby regions.⁵

In summary, it may be said that all of these sources tend to agree as to the inverse relationship between distance and number of migrants and as to the farther distance selectivity of male migrants.

Definition of "Migrant"

Migration as discussed in this section of the study has been determined from prefecture of birth data as given in the 1950 Japanese Census of Population. A "migrant" for these purposes is a person living in Osaka Prefecture in 1950 and classified as having been born in another prefecture. The latter prefecture is considered to be the prefecture of origin.

Methods used in considering these migrants are given in Chapter I, pages 10 and 11.

Method for Measuring Distance

In measuring distance of migration the approximate distance from the geographic center of each prefecture to the geographic center of Osaka-Prefecture was measured. The prefectures were then grouped into zones of 100 mile intervals with zone 1 being the nearest zone and zone 6 being the farthest zone.⁶ These zones have the following limits:

Zone 1	10-99 miles
Zone 2	100-199 miles
Zone 3	200-299 miles
Zone 4	300-399 miles
Zone 5	400-499 miles
Zone 6	500 + miles

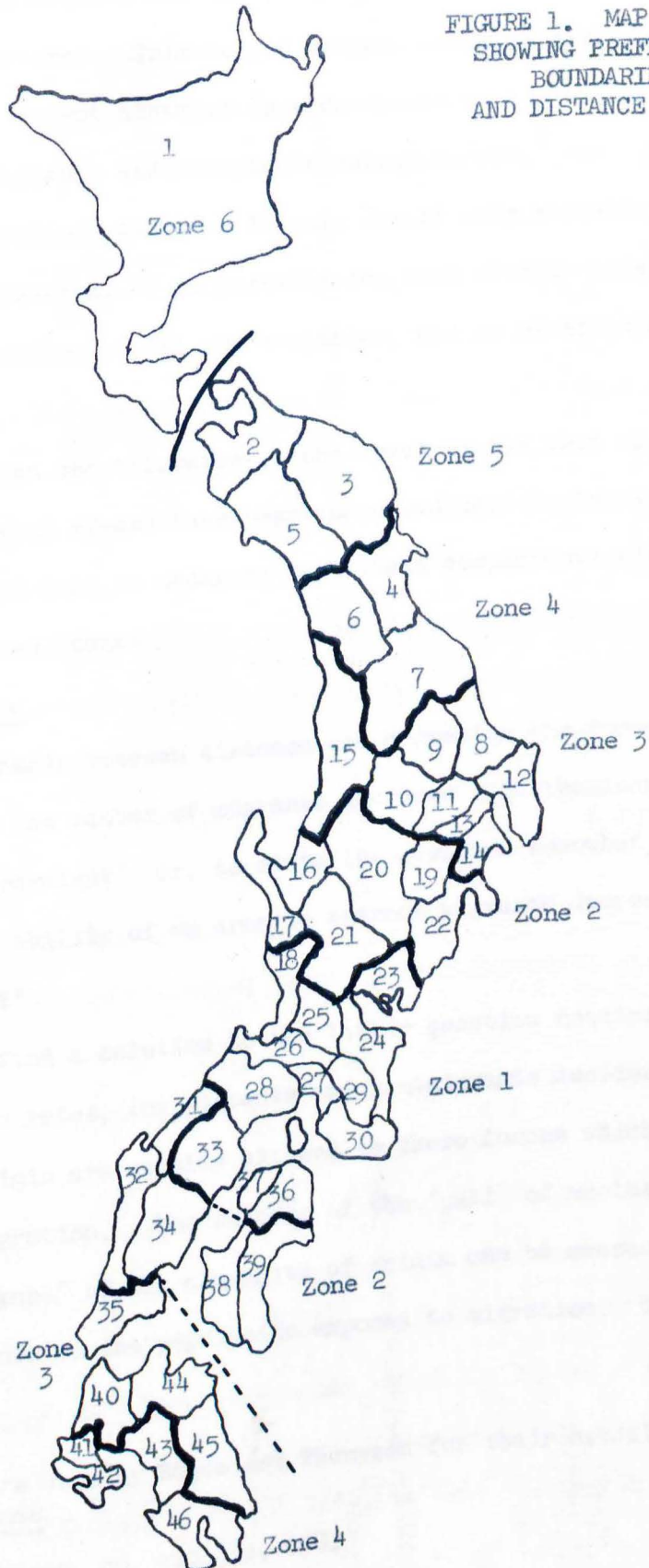
⁵Dorothy S. Thomas, Research Memorandum on Migration Differentials (New York: Social Science Research Council, 1938), p. 326, citing E. Pietschmann, Answerungen der Binnenwanderungen in Gorlitz.

⁶Figure I shows geographic location of all of the prefectures and the distance zones.

FIGURE 1. MAP OF JAPAN
SHOWING PREFECTURAL
BOUNDARIES
AND DISTANCE ZONES

Prefectures

1. Hokkaido
2. Aomori
3. Iwate
4. Miyagi
5. Akita
6. Yamagata
7. Fukushima
8. Ibaraki
9. Tochigi
10. Gumma
11. Saitama
12. Chiba
13. Tokyo
14. Kanagawa
15. Niigata
16. Toyama
17. Ishikawa
18. Fukui
19. Yamanashi
20. Nagano
21. Gifu
22. Shizuoka
23. Aichi
24. Mie
25. Shiga
26. Kyoto
27. Osaka
28. Hyogo
29. Nara
30. Wakayama
31. Tottori
32. Shimane
33. Okayama
34. Hiroshima
35. Yamaguchi
36. Tokushima
37. Kagawa
38. Ehime
39. Kochi
40. Fukuoka
41. Saga
42. Nagasaki
43. Kumamoto
44. Oita
45. Miyazaki
46. Kagoshima



These distances are all straight line map distances irrespective of topographical features. This is, of course, somewhat misleading in determining to what extent distance is a deterrent to migration, but is perhaps the most adaptable and acceptable method in use.⁷

As explained earlier, distance is only one of many variables influencing migration. However, it is possibly the most clearly relatable and the easiest to define of all the variables, and is of singular importance.

Although in Japan the kilometer is the usual linear unit of measure, all distances (and areas) have been expressed here in terms of miles. This has been done in order to facilitate comparisons with studies done in the United States.

Analysis of Migration

In the relationship between distance and migration the foremost question is: "Does the number of migrants decrease with the increase of distance to be traveled?" Or, to state the question somewhat differently, "Does the ability of an area to attract migrants decrease with increasing distance?"

An attempt to find a solution to the latter question requires the use of out-migration rates, for migrants and non-migrants resident in the community of origin are equally exposed to those forces which are likely to induce migration.⁸ The success of the "pull" of another community and/or the "push" of the community of origin can be measured by the ratios of migrants to the population exposed to migration. This is

⁷This method was used by Bogue and Thompson for their article, Migration and Distance.

⁸Bogue and Thompson, op. cit., p. 238.

expressed here as the number of out-migrants to Osaka Prefecture per 1,000 population of the prefecture of origin.

Data on rates of out-migration and distance from Osaka Prefecture are presented in Table II. The rate of out-migration to Osaka Prefecture generally tended to decrease as distance from the prefecture increased. This held for both males and females. However, there were two exceptions to this rule. Zone 4 and zone 6 showed increases rather than the expected decreases. This deviation from the tendency was especially notable in the female out-migration rate.

The theoretical inconsistencies observed in zones 4 and 6 cast even greater doubt on the validity of the premise that females limit themselves to short distance migration. The departure from the tendency, found in zones 4 and 6, is primarily a function of two prefectures, Kagoshima in zone 4 and Hokkaido in zone 6. These two prefectures are unique in that they lie at the opposite extremes of the Japanese islands, Hokkaido being the northernmost prefecture and Kagoshima being the southernmost. Thus these prefectures represent the limits, insofar as political boundaries are concerned, from which internal migrants may come.

A possible partial explanation of the high rate of total out-migration of Kagoshima may be found in the slight decrease in total population (3 per cent) of the prefecture for the period 1945-50. This would provide a somewhat smaller base for the computation of the ratio, and thus a larger ratio.

The data on change in population is not available by sex. However, the low sex ratio (93) of Kagoshima in 1950 indicates an excess of females over males. This, then, does not indicate that the higher out-

TABLE II. PER CENT OF TOTAL AND MALE AND FEMALE OUT-MIGRANTS AND RATE OF OUT-MIGRATION TO OSAKA
PREFECTURE BY DISTANCE ZONES, 1950

Distance Zones	Number of Migrants			Per Cent Distribution of Total Migrants			Rate of Out-Migration				
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	G	Female	G
1	708,588	338,481	370,107	61.0	60.8	61.0	42.1	41.4	42.1	42.7	41.6
2	239,429	119,451	119,978	20.5	21.3	19.7	16.1	16.5	14.3	15.8	13.3
3	125,479	60,570	64,909	10.6	11.1	10.6	4.5	4.4	2.8	4.6	2.8
4	74,948	31,473	43,475	6.4	5.5	7.1	6.6	5.7	4.5	7.5	5.1
5	6,052	2,735	3,317	0.5	0.4	0.6	1.5	1.4	1.3	1.7	1.5
6	9,529	4,549	4,980	0.8	0.8	0.8	2.2	2.1		2.3	
Median	82.0	82.0	82.0								
Quartile Deviation	63.5	63.0	65.0								
Geometric Mean							6.4	6.1		6.7	

migration rate of females than of males is due to a change in the migration base.

The possibility of extreme urbanity or rurality being possible for Kagoshima's high out-migration rate is discussed in that part of this chapter dealing with the possible effects of urbanity of place of origin on distance of migration. This material indicates no significant relationship between these two factors in the case of Kagoshima.

Thus there appears to be no immediate explanation of the high out-migration rate of Kagoshima, other than the possibility that those factors which appear to influence females to migrate farther distances have been felt more strongly here than elsewhere.

Hokkaido Prefecture shows an increase of population 1945-50 (7 per cent), and a somewhat higher sex ratio (102) in 1950 than Kagoshima. Thus the total out-migration rate would not appear to have been raised by a decrease in migration base. The proportion of males to females indicates some possibility of the higher female out-migration rate being due to a change in migration base.

Hokkaido is dealt with in the section on urbanity and this data does not indicate any definite possibility of the degree of urbanity being responsible for the size of Hokkaido's out-migration rates.

Unique social and economic conditions found in Hokkaido could have affected the out-migration rates. This is an area of recent development which even at present is undergoing significant industrial and agricultural transformation. Population is less dense here than elsewhere in Japan, farms are larger and the economy not as typical of greater Japan. The government has long encouraged settlement here from other parts of Japan. This combination of factors could result in a more mobile population and higher out-migration rates.

This relationship between sex and migration can be given further study here by examining the average distance moved by male and female migrants. To find this average, geometric means were computed.⁹ These were for all migrants, on the basis of the six zones, 6.4, 6.1 and 6.7, for both sexes, for males and for females respectively.¹⁰ These values indicate that on the average slightly more females than males, per thousand and population of origin, out-migrate from other prefectures to Osaka Prefecture.

In examining the geometric means for the prefectures constituting the various zones it is seen that in the nearer zones, on the average, less females than males per thousand population of origin out-migrate from other prefectures to Osaka Prefecture. In zone 3, on the average, an equal number of males and females are involved. In the farther zones, slightly more females than males, per thousand, on the average, out-migrate from other prefectures to Osaka Prefecture. Thus it seems that as distance from Osaka Prefecture increases, its attractive force has stronger influence on females than on males.

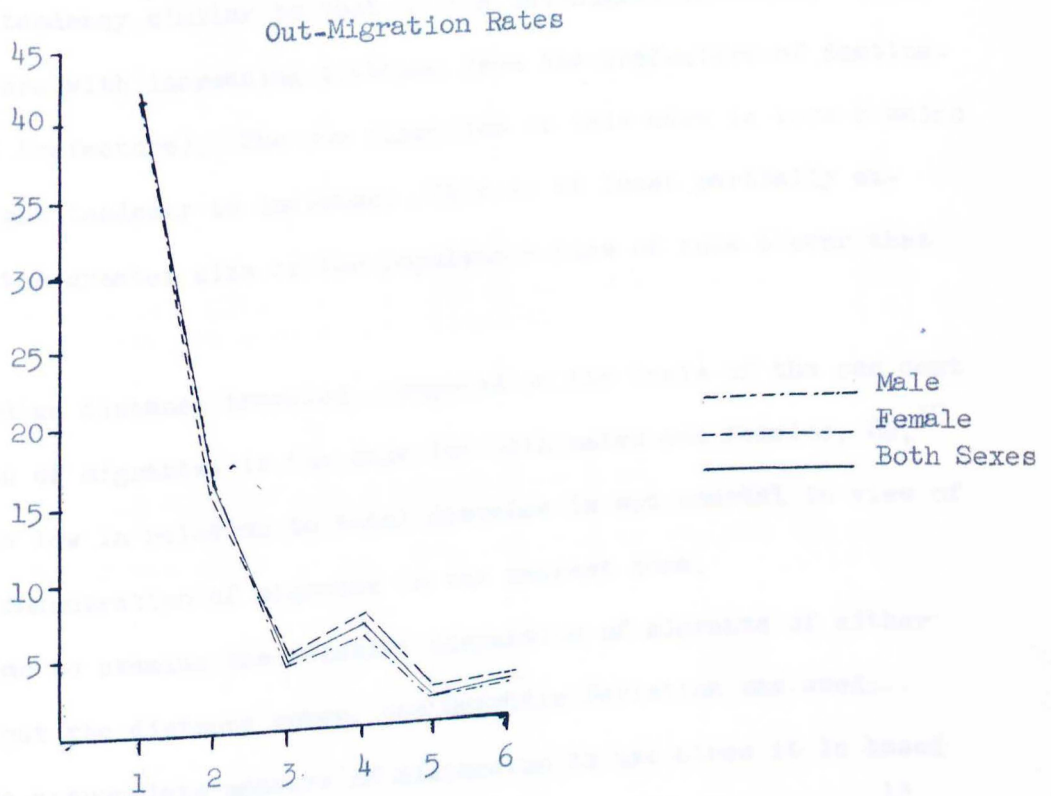
The relative proportion of total migrants was also used in studying the significance of distance, although it permitted less insight than the above measure as it disregards the migration base.¹¹ It was presented simply as the percentage of total formed by the migrants from each zone.

⁹In using the geometric means of various zones one takes into account the number of places involved in each area, whereas the rate from each zone is concerned solely with the number of persons involved.

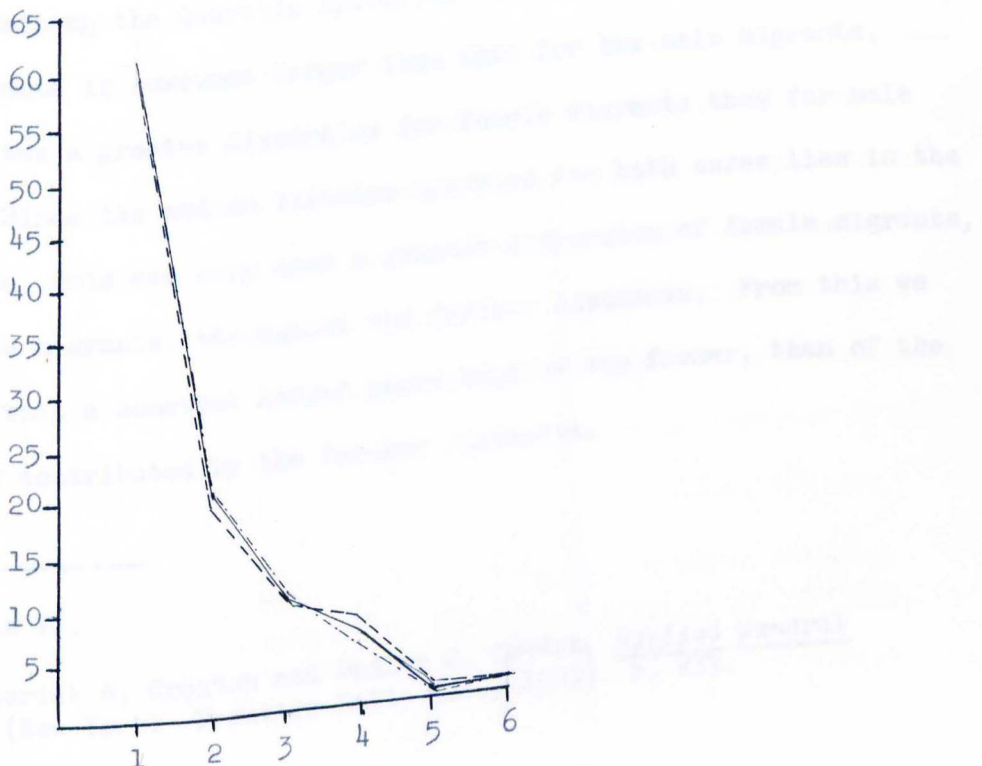
¹⁰Table II.

¹¹The relationship between the per cent distribution of migrants and out-migration rates, is illustrated by Figure 2.

FIGURE 3. OUT-MIGRATION RATES AND PER CENT DISTRIBUTION OF MIGRANTS TO OSAKA PREFECTURE BY DISTANCE ZONES



Per Cent Distribution



The per cent distribution of migrants according to zone of origin exhibits a tendency similar to that of the out-migration rates. There was a decrease with increasing distance from the prefecture of destination (Osaka Prefecture). The one exception in this case is zone 6 which shows a slight tendency to increase. This is at least partially explained by the greater size of the population base of zone 6 over that of zone 5.

The median distance traveled, computed on the basis of the per cent distribution of migrants, is the same for both males and females, 82.¹² That this is low in relation to total distance is not unusual in view of the large concentration of migrants in the nearest zone.

In order to examine the relative dispersion of migrants of either sex throughout the distance zones, the Quartile Deviation was used. This was the appropriate measure of dispersion to use since it is based upon the median, which was used as the measure of central tendency.¹³

In examining the Quartile Deviation one sees that the value for the female migrants is somewhat larger than that for the male migrants. This indicates a greater dispersion for female migrants than for male migrants. Since the median distance traveled for both sexes lies in the nearest zone, this can only mean a greater dispersion of female migrants, than of male migrants, throughout the farther distances. From this we may deduce that a somewhat larger percentage of the former, than of the latter, was contributed by the farther distances.

¹²Table II.

¹³Frederick E. Croxton and Dudley J. Cowden, Applied General Statistics (New York: Prentice-Hall, Inc., 1939), p. 237.

As mentioned previously, this migration, as discussed in relation to distance, is based upon prefecture of birth data. Therefore, these data have the usual deficiencies of place of birth data. The primary inherent weaknesses of these data are:

1. The date of birth is not disclosed.
2. It is impossible to determine when migration indicated by these data occurred. They involve (presumably) people of all ages and may have occurred at any time since birth.
3. Secondary migrations are not revealed.
4. Deaths of migrants are not distinguished from deaths of natives; thus survivals of migrants from decade to decade are difficult to determine, and consequently we do not know the number of new migrants who were required to replace the earlier migrants who died.¹⁴

In spite of these deficiencies of the place of birth data, it is of value because it reveals aspects of migration which no other available data do. Only through the use of these data is it possible to know sources and destinations of migrants, or in other words, routes of migration.

Earlier in this chapter the use of distance as a basis for the analysis of migration was discussed. In connection with this there was mention of variables other than distance which could have direct bearing on migration. It is of interest to note to what extent these appear to temper the effects of distance upon migration. One of the most important of these is social environment as reflected in rurality or urbanity of place of origin and/or destination. It is generally accepted by de-

¹⁴A complete discussion of the value of place of birth data may be found in: C. Warren Thornthwaite, Internal Migration in the U.S. (Philadelphia: University of Pennsylvania Press, 1934), pp. 5-7.

demographers that a major part of the internal migration of Japan is a rural to urban movement.¹⁵

Bogue and Thompson as earlier quoted said that urban communities both send and receive more migrants than rural communities, and that rural-urban migration is primarily short distance migration. The latter also forms the bulk of all internal migration.

This data here studied does not seem to indicate that these latter two relationships can be considered to hold true in Japan with any great degree of exactitude. Using the per cent of population resident in cities (shi) as a measure of urbaness, the prefectures of Japan were ranked according to degree of urbaness. The prefecture ranked as most urban was Tokyo with 89 per cent of its population resident in cities, and second was Osaka with 78 per cent. The high rank of Osaka is to be expected from previous discussion of its urban, industrial nature. Thus if urban-urban migration is of particular significance in Japan, Osaka would seem a logical destination for such migrants.

The prefecture in each zone which had the highest rate of out-migration, compared to other prefectures in the zone, was examined for degree of urbaness.¹⁶ It was found that one of these was located in the upper one-fourth of prefectures ranked according to degree of urbaness, two in the lower one-fourth, and the rest evenly distributed throughout the remaining prefectures. Thus, urbanity of prefecture of origin and of destination appears here to be of less significance in relation to high out-migration rates than does distance of migration.

¹⁵Andrew J. Grad, "Land Reform in Japan," Pacific Affairs, 21:117, June, 1948.

¹⁶Note Table III.

TABLE III. DISTANCE ZONE AND DEGREE OF URBANITY OF THOSE PREFECTURES HAVING THE HIGHEST OUT-MIGRATION RATE IN EACH ZONE

Degree of Urbanity	Prefecture	Out-Migration Rate	Distance Zone
Upper one-fourth	Hokkaido	2.2	6
Lower one-fourth	Nara	121.5	1
	Akita	2.4	5
Remainder	Tottori	34.5	2
	Oita	8.8	3
	Kagoshima	17.8	4

When the eight prefectures which contribute over 50 per cent of the migrants to Osaka Prefecture were examined according to degree of urbanity,¹⁷ it was found that only two were in the upper one-fourth of all prefectures, one was in the lower one-fourth, while the other five were evenly distributed throughout the remainder of the prefectures. This indicates neither predominate urban-urban or rural urban-migration.

TABLE IV. DEGREE OF URBANITY OF THE EIGHT PREFECTURES CONTRIBUTING THE MAJORITY OF MIGRANTS TO OSAKA PREFECTURE

Degree of Urbanity	Prefecture	Per Cent Migrants Contributed	Distance Zone
Upper one-fourth	Kyoto	6.1	1
	Hyogo	14.8	1
Lower one-fourth	Nara	8.0	1
Remainder	Mie	4.1	1
	Wakayama	7.3	1
	Hiroshima	4.6	2
	Kagawa	4.5	1
	Tokushima	4.5	1

Both the prefectures in the upper one-fourth and that in the lower one-fourth of all prefectures are contiguous to Osaka Prefecture. The remainder of the eight prefectures lie in zones 1 and 2. Thus this data seems to indicate that while there is both urban-urban and rural-urban

¹⁷Note Table IV.

migration in Japan, on the whole, distance per se is of enough significance to outweigh any selective force which degree of urbanity might exert.

In examining those prefectures in which female out-migration rates noticeably exceeded male out-migration rates, it was found that there was a uniform distribution of these prefectures throughout all prefectures ranked according to urbaness. The same is true of those prefectures in which male out-migration rates exceed the female. Thus, according to this data it seems that there is no particular relationship between the sex of the migrant and the degree of the urbaness of the place of origin. The sex of migrants will be discussed further in the chapter on net migration.

Conclusions

On the basis of this data it may be concluded that in Japan, as in western civilizations, the numbers of migrants in-migrating to an area is inversely related to the distance to be traveled. This is not as equally true for females as for males. The data show that there is a definite tendency for females to migrate longer distances. This is contrary to the findings of western demographers which in general indicate that male migrants tend to predominate among those traveling farther distances.

There appears to be no definite relationship, on the basis of this data, between the degree of urbaness of place of origin and the sex of migrants. This is an area where further research could be of value. It is the author's opinion that rural to urban migration is of importance in Japan and that the bulk of this, as would be expected from other demographic studies, is short distance migration. It may be because of this latter factor that this study has not determined the existence of

these relationships. This would be true if, as the author suspects, the bulk of the rural to urban movement is accomplished within the various prefectures and thus is not brought out by this prefecture to prefecture data.

Although the analysis of this data has revealed certain basic agreements with the findings of western demographers in general (such as the relationship of number of migrants and distance to be traveled), the author feels that enough indication of unusualness has been found to warrant further study in this area. Field studies of the interview type, in conjunction with studies based on census data, could certainly do much to determine the validity of apparent differences between Japanese and western migration.

For the study of the effects of migration on specific groups the data given is perhaps somewhat insufficient. It should be noted that in using this data to study the effects of migration, one is studying specific age and sex groups, it is not simply the migrants (i.e., those who have migrated into a particular area) who are being studied. What is studied is the net migration, or the gain or loss to an area through the balance of immigration and emigration (i.e., migration out of a particular area). In computing net migration estimates, allowances are made for deaths in specific age and sex groups. But no allowance can be made for losses due to emigration.

These, however, are limitations of migration data generally, not of this study.

It is hoped for this study, as it is for all studies of the migration, that the migration data was not biased significantly by changes in migration during the period covered. This is also hoped for this study since the level number of migrants in 1947 would reflect the feature from other countries of the high level of migration in 1947.

CHAPTER IV

AN ESTIMATE OF NET MIGRATION TO

OSAKA PREFECTURE: 1947-1950

Hypothesis

In attempting to understand migration as a group phenomenon, one of the most useful methods of study is an estimate of net migration. In this device the main focus is the study of the major demographic effects of migration upon the composition of populations, and upon the geographic distribution of specified population groups. Of especial interest are nativity, age and sex groups.

For the study of the effects of migration upon these groups the data given in routine census information are sufficient.¹ It should be understood that in using this data to compute estimated net migration, and to study specific age and sex groups, it is not simply in-migrants (i.e., those who have migrated into a particular area) who are being studied. What is studied is the net migration, or net gain or loss to an area through the balance of in-migration and out-migration (i.e., migration out of a particular area). In computing net migration estimates, allowances are made for deaths in specific sex and age groups. But no allowance can be made for losses due to out-migration.²

¹Thomas, Research Memorandum on Migration Differential, op. cit., p. 398.

²It is assumed for this study, as is usual for estimates of net migration, that the population has not been affected appreciably by emigration or immigration during the period studied. This seems justified in this case since the total number of Japanese who had entered Osaka Prefecture from other countries at any time previous to 1950, formed less than 3 per cent of the 1950 population.

The length of the time period used for studying migration is important when making an estimate of net migration. The longer the period the more chance that moves will cancel one another through return migration. This results in fewer persons being classified as migrants per unit of time. Also, when one migrant makes many moves these are likely to be classified as one move when a longer period is used in studying migration.³ Thus it seems probable that use of a short period for making an estimate is likely to present a truer picture of in-migration and of "one-move" migrants.

In the main, studies of net migration in the United States are for ten year periods. These correspond to the time intervals covered by the usual decennial censuses. For estimates of net migration in other countries varying periods of time may be used although the ten year period is not an uncommon one. Western demographers tend to agree on several of the conclusions coming from these studies. An aspect on which they agree generally, and which is of primary interest to this study, is the age characteristics, or age selectivity, of migrants. There tends to be somewhat less agreement on sex selectivity of migrants.

The following quotations indicate the general agreement on age selectivity of migrants. Dorothy S. Thomas says:

The one generalization about migration differentials which can be considered definitely established, although even this one cannot be stated precisely, is the following: there is an excess of adolescents and young adults among migrants, particularly migrants from rural areas to towns,⁴ compared with the non-migrating or the general population.

³Jaffee, op. cit., p. 181.

⁴Thomas, Research Memorandum on Migration Differentials, op. cit., p. 11.

In a study of rural migrants in Ohio, Lively and Foott found, "More than 80 per cent of the males and 70 per cent of the females were between the ages of 21 and 35 at the time of leaving home. Nearly one-third of the females were under 21."⁵

Thomas found this selectivity to be the case in both Sweden and Holland. She says, "As in the case of recent Swedish migrants, the Amsterdam migrants are highly concentrated in the young adult ages. The median age of male in-migrants was $24\frac{1}{2}$ years for the period 1926-30; for females 24 years."⁶

A United Nations summary of migration studies states, "The findings of studies on the characteristics of internal migrants indicate that their typical age distribution is similar to that of international migrants, with the largest numbers in the ages of young adulthood."⁷

Findings regarding the sex of migrants are much less consistent. As early as 1885 E. G. Ravenstein concluded from a study of British data that females are more migratory than males.⁸ Succeeding analyses of sex selection have varied in their findings. From an analysis of Swedish data for 1930, Dorothy S. Thomas was able to infer that migration is more strongly selective of females than of males. This was especially

⁵Charles E. Lively and F. Foott, Population Mobility in Selected Areas of Rural Ohio, 1928-1935 (Bulletin 582. Wooster: Ohio Agricultural Experiment Station, 1937), p. 29.

⁶Thomas, Research Memorandum on Migration Differentials, op. cit., p. 46.

⁷United Nations, The Determinants and Consequences of Population Trends, op. cit., p. 302.

⁸E. G. Ravenstein, "The Laws of Migration," Journal of the Royal Statistical Society, 48:199, June, 1885.

true of migration to urban areas.⁹ However, in an analysis of German data for 1910 it was found by Heberle and Meyer that male mobility was in general much higher than female. Even in this case, though, there was considerable variation among areas studied.¹⁰

Some recent American studies also show variation in sex selection. In a study of migration in Michigan 1935-1940, Amos Hawley found that males were more migratory than females. He qualified this by saying that this might be expected by the high sex ratios of the 1940 population for the regions studied.¹¹ Warren S. Thompson found in a study of migration within Ohio 1935-1940 that females predominated in migration to urban areas and that males predominated in migration to rural areas.¹²

The general tendency in sex selectivity of migrants is rather well described by the following paragraph:

The sex ratio among internal migrants, however, does not follow a standard pattern. In general, it appears that men are more willing to migrate than women. But the movement of couples and movements incident to marriage tend to equalize mobility of the sexes. The migration of female domestic servants tends to raise female mobility and in many countries the increasing employment of women in urban occupations during recent decades has worked in the same direction.¹³

⁹Thomas, Social and Economic Aspects of Swedish Population Movements, op. cit., p. 46.

¹⁰Rudolph Heberle und Fritz Meyer, Die Grosstadte im Strome der Binnenwanderung, cited by Thomas, Research Memorandum on Migration Differentials, op. cit., p. 67.

¹¹Amos H. Hawley, Intrastate Migration in Michigan: 1935-1940 (University of Michigan Governmental Studies No. 25. Ann Arbor: University of Michigan Press, 1953), p. 99.

¹²Warren S. Thompson, Migration Within Ohio, 1935-1940 (Miami: Scripps Foundation, 1951), pp. 95-98.

¹³United Nations, The Determinants and Consequences of Trends, op. cit., p. 302.

The preceding material on age and sex selectivity of migration has shown that migration tends generally to select young adult age groups. It has also shown that while migration is sex selective, there is variation in this selection, depending on the time, area, and peculiar circumstances of the migration studied. With these findings in mind, the hypothesis that Japanese migration is selective of certain age and sex groups was tested in this study of net migration.

Method Used for Estimate

An estimate was made of the net migration of Osaka Prefecture for 1947 to 1950. For this estimate three year age and sex specific survival coefficients were computed on the basis of a 1947 Life Table for Japan as a whole. These coefficients were then applied to the census population for 1947 and an estimated population for 1950 was obtained. The estimated population was then subtracted from the census population for 1950. The difference was attributed to net migration. The methodology used is described in detail on pages 11 and 12 of Chapter I.

Method of Analysis

In analyzing the data resulting from the estimate of net migration, descriptive statistics were used. Percentages were used to indicate the proportion of migrants found in each sex and age group, both among the migrants themselves and among the total population of Osaka Prefecture in 1950.

The median was used as a measure of central tendency in describing the age distribution of migrants. This was an appropriate measure since the age distribution was noticeably skewed, and the presence of extreme cases has less effect on the median than on other measures of central tendency.¹⁴

¹⁴Hagood, op. cit., pp. 133-134.

Analysis of Migration

The estimated net migration for those aged three through ninety-four years of age was found to number more than 300,000 persons.¹⁵ A definite concentration of migrants was found in the younger age groups. This is illustrated by the median ages for both sexes, for males, and for females. These are 21.6, 20.4 and 22.9, respectively. Percentage wise the modal group was the 15-19 year old group. The next largest group was found to be the 20-24 year old group.

Nearly 50 per cent of the migrants were found to be between the ages of 15 to 30. An analysis of this group by single year of age showed age 16 to be the modal year for each of the sexes as well as for total migrants.

The distribution of each of the sexes was found to be positively skewed, with the highest value for the quartile measure of skewness being found for the females. This indicates a somewhat greater dispersion of females through the older age groups.

For migrants as a whole, females formed 5 per cent more of the group than did males. Males predominate in the lower ages up to the age 15-19. In this group and at all older ages, females form the larger part of each group. The more marked differences are found in the older age groups, beginning with age 25, as would be expected from the higher value of the measure of skewness.

These migrants, as a whole, form about 8 per cent of the total 1950 population of Osaka Prefecture. The females constitute a slightly greater proportion of all females in the population than do the migrant males of their sex group. Migrants form a greater percentage of the 15-19 age

¹⁵Table V.

TABLE V. AGE AND SEX DISTRIBUTION OF ESTIMATED NET MIGRATION OF OSAKA PREFECTURE, 1947-1950.

Age	Number of Migrants			Per Cent Distribution			Per Cent		Per Cent of 1950		
				of Migrants			Migrants, Each		Total Population		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Male	Female	Both Sexes	Male	Female
Total	315,219	148,703	166,516	100.0	100.0	100.0	47.2	52.8	8.2	7.8	8.5
3-4 Years	17,496	9,392	8,104	5.5	6.3	4.9	53.7	46.3	10.4	10.9	9.9
5-9 "	34,761	18,847	15,914	11.0	12.7	9.6	54.2	45.8	8.6	9.2	7.9
10-14 "	25,242	13,661	11,581	8.0	9.2	7.0	54.1	45.9	7.3	7.8	6.8
15-19 "	63,901	30,773	33,128	20.3	20.7	19.9	48.2	51.8	16.0	15.3	16.7
20-24 "	50,559	25,067	25,492	16.0	16.9	15.3	49.6	50.4	13.0	12.8	13.2
25-29 "	31,662	14,421	17,241	10.0	9.7	10.4	45.5	54.5	10.1	10.1	10.2
30-34 "	21,065	8,255	12,810	6.7	5.6	7.7	39.2	60.8	7.9	6.9	8.8
35-39 "	21,015	9,607	11,408	6.7	6.5	6.9	45.7	54.3	7.9	7.5	8.1
40-44 "	11,886	5,299	6,587	3.8	3.6	4.0	44.6	55.4	5.0	4.4	5.5
45-49 "	7,848	2,726	5,122	2.5	1.8	3.1	34.7	65.3	3.7	2.5	5.0
50-54 "	5,048	1,670	3,378	1.6	1.1	2.0	33.1	66.9	3.0	1.9	4.1
55-59 "	5,606	1,936	3,670	1.8	1.3	2.2	34.5	65.5	4.5	3.0	6.1
60-64 "	5,574	2,000	3,574	1.8	1.3	2.1	35.9	64.1	5.9	4.3	7.4
65-69 "	4,911	2,063	2,848	1.6	1.4	1.7	42.0	58.0	7.3	7.1	7.5
70-74 "	4,417	1,655	2,762	1.4	1.1	1.7	37.5	62.5	9.9	9.6	10.1
75-84 "	4,029	1,315	2,714	1.3	0.9	1.6	32.6	67.4	13.7	13.9	13.7
85-94 "	199	16	183	0.1	-	0.1	8.0	92.0	9.7	3.8	11.2
Median Age	21.6	20.4	22.9								
SK _Q	.24	.14	.28								
SK _Q varies within limits	± 1.0										

group than of any other age group in the population. This is true for each sex. An examination by single years of age showed the modal age to be 16 years. Males were slightly in excess of females, constituting 18.6 per cent of those 16 years of age, while females formed 18.0 per cent of the females in the same age group. The larger percentages of migrants generally were found in ages 15-30. Migrants in all other age groups formed a comparatively smaller proportion of the total population with the exception of the age groups 70-74 and 75-84. This is true for each sex as well as for total migrants.

In this estimate of net migration migrants are seen to be concentrated in the younger age groups. This is as would be expected since the literature which has been cited in this chapter showed that the preponderance of migrants is universally found in these groups. To some extent this could also be a reflection of the age distribution in the total Japanese population. In 1950 approximately one-third of the population was found in the age groups 15 years and younger.

The reason for Osaka's being chosen as a destination for the younger age groups would seem to be primarily economic. In an urban, industrial area such as Osaka, there would be a greater possibility of employment for these groups than elsewhere. This possibility will be explored further in the discussion of female migrants.

The comparatively large percentage of total population formed by migrants in the 70-84 age group could have two possible explanations. It could be that survival coefficients used for these groups were inaccurate. It could also be that in previous years, especially war years, people in these older age groups, being unproductive, had decided or been encouraged to out-migrate, thus leaving a relatively small number of people in these groups in the total population of Osaka Prefecture.

Then, any in-migration of people in these groups would form a large percentage of the number in the groups.

This estimated net migration indicates, as does the prefecture of birth data, that females are more likely to migrate to Osaka Prefecture than are males. While the greatest number of both males and females seem to migrate between ages 15-19, there are proportionately more females than males in the older groups.

It seems very likely that a considerable portion of those persons, especially women, who entered Osaka Prefecture during the period 1945 to 1950 were evacuees who were returning to areas they had left during 1940 to 1945. Diverse sources indicate that during the latter period numerous persons, predominantly women and children, left urban areas for nearby rural areas. These sources further indicate that during 1945 to 1950 the majority of these people returned to those same places which they had earlier evacuated.¹⁵

Several other factors could be responsible for the preponderance of women. The first is the low sex ratio of all Japan. Second is the tendency of women to migrate to the more urban areas. The combination of these two could be responsible for the greater proportion of women migrants in the older age groups since women are preponderant in these groups in the total Japanese population.

A possible explanation of the excess of females in the 15-30 age group might be found in the concentration of light industries, employing many females, in the Osaka area. This is especially true of the textile

¹⁵The Foreign Affairs Association of Japan, The Japan Year Book, 1949-1952 (Tokyo: The Foreign Affairs Association of Japan, 1952), pp. 26-27; United States Department of State, Population and Migration in Japan (Washington, D.C.: Office of Strategic Services, 1945), p. 21.

industry which employs mainly young women.¹⁶ Since the per cent of females employed in manufacturing in Osaka Prefecture increased by 18 per cent while the per cent of men employed in manufacturing decreased 2 per cent,¹⁷ 1947-50, it seems possible that women come to this prefecture seeking employment in this or related industries. Also, since about 10 per cent¹⁸ of the Japanese women remain employed after marriage, this same factor might partially account for the number of women in the older age groups.

Conclusions

From the findings concerning the migrants identified by this estimate of net migration, it seems to be definitely shown that migration to this area of Japan is selective of women and of younger age groups. These findings also seem to warrant the conclusion that in these characteristics Japanese migration is similar to western migration in its selection of certain youths and young adults, and of women.

¹⁶Chiang Hsieh, "Post-War Developments in the Japanese Textile Industry," International Labour Review, 62:23, November, 1950.

¹⁷From unpublished data supplied by the Japan Statistical Association (for 1947) and from the 1950 Japanese Census of Population.

¹⁸International Labour Organization, "Women's Employment in Asian Countries," International Labour Review, 68:9 September, 1953.

CHAPTER V

SUMMARY

Japan is a nation passing through significant transitional phases, in the process of industrialization. The effects of this same transition have long since been felt in Western societies. The economic transition of the nation has been especially notable in recent years. In the development of an agrarian economy into an industrial one, it is inevitable that there should be considerable relocation of persons within a nation. This study analyzes certain characteristics of Japanese internal migration. It investigates the relationships between migration and distance of move, and the sex and age characteristics of migrants.

The consideration of the factor of distance led to a study of a specific area of Japan rather than the nation as a whole. Osaka Prefecture was the selected site. It is an area of Japan which, due to its industrial nature, is especially significant as a point of focus for the study of internal migration in Japan. In addition to its economic development and more recent re-development, war and postwar population changes indicate that the period chosen for the study of net migration, 1947-1950, is one which should give fruitful insight into the characteristics of contemporary Japanese internal migration.

Place of birth data were used in examining the relationship between the number of migrants to Osaka Prefecture and the distance of migration. Out-migration rates were the first form of measurement used to describe this relationship. These rates indicate that fewer persons tend to migrate to Osaka Prefecture as the distance between this prefecture and

their prefecture of origin increases. This was found to be less true of females than of males.

Mean out-migration rates indicated that on the average more females than males out-migrated from other prefectures to Osaka Prefecture. The mean out-migration rates for various areas classified on the basis of their distance from Osaka Prefecture indicated that more females than males on the average out-migrated from the farther distances to Osaka Prefecture. This indicates that as distance from Osaka Prefecture increases, its attractive force declines, but continues to have a stronger influence on females than on males.

The relative proportion of migrants contributed by each area was also used in studying the significance of distance. This was presented simply as the percentage of total migrants formed by those migrants from each area. This per cent distribution of migrants exhibited tendencies similar to those of the out-migration rates.

Distance of migration and sex of migrants, in relation to degree of urbaness of place of origin, was examined. No evident relationship was indicated. It was proposed that this was an area in need of further research.

In general the relationship between distance and migration found in this study agrees with the conclusions of Western demographers concerning this aspect of migration. An exception to this agreement was found in the relationship of sex of migrants and distance of migration. These data indicate that more females than males tend to migrate from farther distances to Osaka Prefecture. This is in contradiction to what one would expect from Western studies of migration.

An estimate of net migration to Osaka Prefecture for the period 1947-1950 was computed through the use of survival coefficients for all

Japan in 1947. These coefficients were applied to the 1947 census data and the result contrasted with the 1950 census data to obtain an estimate of net migration.

The estimated net migration showed a preponderance of migrants in the younger age groups and an excess of females over males. Females were found to be more predominate in the older age groups. The significance of young adults among these migrants is in accordance with the findings of Western migration studies. The greater number of female migrants is also what one would expect from the results of Western studies.

Thus, these data seem to indicate that, basically, Japanese internal migration is similar to Western internal migration.

Table VI: Prefecture of Japan with Total 1950 Census Population, Number of Persons Born in Prefecture Resident in Osaka Prefecture in 1950, Int-Migration Index to Osaka Prefecture, and Int-Index of Total Population Resident in Osaka (201) in 1950

Prefecture	1950 Population			Prefecture of Birth of Migrants Resident in Osaka 1950			Int-Migration Index to Osaka			Int-Index of Total Population Resident in Osaka	
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1. Hokkaido	1,277,267	1,145,174	2,422,441	1,369	1,369	2,738	2.3	2.3	2.3	25.2	25.2
2. Aomori	1,046,569	967,300	2,013,869	1,790	1,790	3,580	1.7	1.7	1.7	21.2	21.2
3. Iwate	1,346,723	1,245,703	2,592,426	1,704	1,704	3,408	1.3	1.3	1.3	17.0	17.0
4. Miyagi	1,645,448	1,500,375	3,145,823	1,777	1,777	3,554	1.1	1.1	1.1	16.4	16.4
5. Akita	1,309,591	1,145,366	2,454,957	1,303	1,303	2,606	1.1	1.1	1.1	15.4	15.4
6. Yamagata	1,227,567	1,050,255	2,277,822	1,308	1,308	2,616	1.1	1.1	1.1	14.3	14.3
7. Ibaraki	2,763,524	2,457,371	5,220,895	1,401	1,401	2,802	1.1	1.1	1.1	14.3	14.3
8. Tochigi	2,086,418	1,963,768	4,050,186	1,305	1,305	2,610	1.1	1.1	1.1	13.7	13.7
9. Gunma	1,250,460	1,048,135	2,298,595	1,403	1,403	2,806	1.1	1.1	1.1	13.7	13.7
10. Saitama	1,603,380	1,459,570	3,062,950	1,376	1,376	2,752	1.1	1.1	1.1	13.4	13.4
11. Chiba	2,346,119	2,096,750	4,442,869	1,471	1,471	2,942	1.1	1.1	1.1	13.4	13.4
12. Tokyo	6,277,500	5,168,101	11,445,601	1,508	1,508	3,016	1.1	1.1	1.1	13.4	13.4
13. Kanagawa	2,457,665	2,048,733	4,506,398	1,473	1,473	2,946	1.1	1.1	1.1	13.4	13.4
14. Niigata	1,450,997	1,264,863	2,715,860	1,474	1,474	2,948	1.1	1.1	1.1	13.4	13.4
15. Toyama	1,000,790	868,890	1,869,680	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
16. Ishikawa	857,279	752,373	1,609,652	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
17. Fukui	752,374	651,353	1,403,727	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
18. Yamaguchi	611,359	505,353	1,116,712	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
19. Beppu	2,060,331	1,801,335	3,861,666	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
20. Oita	1,346,119	1,145,366	2,491,485	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
21. Fukuoka	2,371,472	2,060,331	4,431,803	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
22. Aichi	3,330,335	2,949,136	6,279,471	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
23. Mie	1,341,167	1,145,366	2,486,533	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
24. Shiga	601,180	513,116	1,114,296	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4
25. Kyoto	1,032,954	861,316	1,894,270	1,470	1,470	2,940	1.1	1.1	1.1	13.4	13.4

APPENDIX

Table VI: Prefectures of Japan with Total 1950 Census Population, Number of Persons Born in These Prefectures Resident in Osaka Prefecture in 1950, Out-Migration Rates to Osaka Prefecture, and Per Cent of Total Population Resident in Cities (Shi) in 1950

Prefecture	1950 Population			Prefecture of Birth of Migrants Resident in Osaka			Out-Migration Rate to Osaka			Per Cent Population Resident in Cities
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female	
1* Hokkaido	4,295,567	2,169,393	2,126,174	9,529	4,549	4,980	2.2	2.1	2.3	35.5
2. Aomori	1,282,867	635,547	647,320	1,638	709	929	1.3	1.1	1.4	21.5
3. Iwate	1,346,728	664,000	682,728	1,304	644	660	1.0	1.0	1.0	17.0
4. Miyagi	1,663,442	828,879	834,563	2,777	1,288	1,489	1.7	1.6	1.8	26.4
5. Akita	1,309,031	646,445	662,586	3,110	1,382	1,728	2.4	2.1	2.6	13.4
6. Yamagata	1,357,347	660,555	696,792	3,808	1,859	1,949	2.8	2.8	2.8	21.3
7. Fukushima	2,062,394	1,006,823	1,055,571	3,821	1,922	1,899	1.9	1.9	1.8	14.5
8. Ibaraki	2,039,418	993,694	1,045,724	2,808	1,430	1,378	1.4	1.4	1.3	10.6
9. Tochigi	1,550,462	752,266	798,196	2,815	1,480	1,335	1.8	2.0	1.7	18.7
10. Gumma	1,601,380	778,910	822,470	2,378	1,243	1,135	1.5	1.6	1.4	24.0
11. Saitama	2,146,445	1,049,695	1,096,750	2,671	1,398	1,273	1.2	1.3	1.2	24.3
12. Chiba	2,139,037	1,036,932	1,102,105	3,308	1,652	1,656	1.5	1.6	1.5	26.2
13. Tokyo	6,277,500	3,169,389	3,108,111	37,632	18,160	19,472	6.0	5.7	6.3	89.1
14. Kanagawa	2,487,665	1,247,934	1,239,731	7,955	3,793	4,162	3.2	3.0	3.4	75.0
15. Niigata	2,460,997	1,194,929	1,266,068	11,944	5,708	6,236	4.9	4.8	4.9	18.1
16. Toyama	1,008,790	488,850	519,940	18,720	9,959	8,761	18.6	20.4	16.9	29.4
17. Ishikawa	957,279	460,859	496,420	25,222	13,550	11,672	26.3	29.4	23.5	37.1
18. Fukui	752,374	364,343	388,031	27,359	14,521	12,838	33.1	36.4	33.2	22.9
19. Yamanashi	811,369	393,550	417,819	2,758	1,498	1,260	3.4	3.8	3.0	15.0
20. Nagano	2,060,831	1,001,192	1,059,639	8,386	4,170	4,216	4.1	4.2	4.0	16.2
21. Gifu	1,544,538	762,295	782,243	17,915	9,436	8,479	11.6	12.4	10.8	23.8
22. Shizuoka	2,471,472	1,206,651	1,264,821	9,024	4,601	4,423	3.7	3.8	3.5	34.1
23. Aichi	3,390,585	1,649,189	1,741,396	24,785	12,999	11,786	7.3	7.9	6.8	49.0
24. Mie	1,461,197	704,805	756,392	47,275	23,528	23,747	32.4	33.4	31.4	32.4
25. Shiga	861,180	413,110	448,070	39,085	20,107	18,978	45.4	48.7	42.4	21.0
26. Kyoto	1,832,934	891,616	941,318	71,341	33,343	37,998	38.9	37.4	40.4	69.4

Table VI (continued): Prefectures of Japan with Total 1950 Census Population, Number of Persons Born in These Prefectures Resident in Osaka Prefecture in 1950, Out-Migration Rates to Osaka Prefecture, and Per Cent of Total Population Resident in Cities (Shi) in 1950

Prefecture	1950 Population			Prefecture of Birth of Migrants Resident in Osaka			Out-Migration Rate to Osaka			Per Cent Population Resident in Cities
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female	
27. Osaka	3,857,047	1,899,745	1,957,302	--	--	--	--	--	--	78.4
28. Hyogo	3,309,935	1,622,755	1,687,180	172,612	80,643	91,969	52.1	49.7	54.5	51.2
29. Nara	763,883	368,863	395,020	92,812	41,322	51,490	121.5	113.6	130.3	14.3
30. Wakayama	982,113	475,324	506,789	84,774	38,743	46,031	86.3	81.5	90.8	30.3
31. Tottori	600,177	289,787	310,390	20,681	10,177	10,504	34.5	35.1	33.8	20.1
32. Shimane	912,551	444,355	468,196	16,501	7,931	8,570	18.1	17.8	18.3	17.5
33. Okayama	1,661,099	804,357	856,742	44,447	22,314	22,133	26.8	27.7	25.8	20.8
34. Hiroshima	2,081,967	1,015,955	1,066,012	54,020	26,987	27,033	25.9	26.6	25.4	31.6
35. Yamaguchi	1,540,882	760,220	780,662	16,541	8,089	8,452	1.1	1.1	1.1	49.6
36. Tokushima	878,511	427,684	450,827	52,179	25,572	26,607	59.4	59.8	59.0	18.7
37. Kagawa	946,022	457,980	488,042	51,919	25,389	26,530	54.9	55.4	54.4	21.5
38. Ehime	1,521,878	742,092	779,786	40,809	19,834	20,975	26.8	26.7	26.9	27.9
39. Kochi	873,874	425,968	447,906	25,393	11,308	14,085	29.1	26.5	31.4	18.5
40. Fukuoka	3,530,169	1,745,606	1,784,563	19,805	9,487	10,318	5.6	5.4	5.8	45.1
41. Saga	945,082	455,824	489,258	6,860	3,406	3,454	7.3	7.5	7.1	12.6
42. Nagasaki	1,645,492	812,079	833,413	13,224	5,714	7,510	8.0	7.0	9.0	36.4
43. Kumamoto	1,827,582	882,420	945,162	12,432	5,424	7,008	6.8	6.1	7.4	25.6
44. Oita	1,252,999	604,825	648,174	11,016	5,427	5,589	8.8	9.0	8.6	28.5
45. Miyazaki	1,091,427	535,107	556,320	6,606	2,703	3,903	6.1	5.1	7.0	32.0
46. Kagoshima	1,804,118	868,963	935,155	32,026	11,860	20,166	17.8	13.6	21.6	22.4

*Numerical designations are those used in the Japanese census of population.

Table VII: Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950

Age	L _x Male	L _x Female	SR Male	SR Female	Census Popu- lation 1947 Male	Census Popu- lation 1947 Female	Census Popu- lation 1950 Male	Expected Popula- tion 1950 Male	Residual Male	Census Popu- lation 1950 Female	Expected Popula- tion 1950 Female	Residual Female
0	95,701	96,168	.9007	.9064	53,965	51,265	50,103	--	--	47,733	--	--
1	89,887	90,838	.9503	.9511	29,919	28,442	57,688	--	--	55,385	--	--
2	87,524	88,494	.9700	.9704	32,776	32,170	56,376	--	--	54,085	--	--
3	86,199	87,169	.9805	.9813	39,915	38,830	53,776	48,606	5,170	50,602	46,467	4,135
4	85,421	86,396	.9860	.9870	37,658	37,203	32,654	28,432	4,222	31,020	27,051	3,969
5	84,902	85,875	.9893	.9905	40,490	40,177	35,524	31,793	3,731	34,219	31,218	3,001
6	84,521	85,540	.9913	.9923	39,156	39,173	43,066	39,137	3,929	42,052	38,104	3,948
7	84,229	85,274	.9927	.9935	33,188	32,883	40,782	37,131	3,651	39,942	36,719	3,223
8	83,990	85,059	.9936	.9942	29,333	29,281	43,119	40,057	3,062	42,462	39,795	2,667
9	83,788	84,878	.9943	.9946	31,305	30,238	43,289	38,815	4,474	41,946	38,871	3,075
10	83,612	84,716	.9946	.9946	33,127	32,996	36,050	32,946	3,104	35,218	32,669	2,549
11	83,456	84,565	.9945	.9942	35,032	34,435	31,456	29,145	2,311	31,129	29,111	2,018
12	83,310	84,417	.9939	.9932	33,498	31,967	33,943	31,127	2,816	32,742	30,075	2,667
13	83,163	84,259	.9927	.9917	32,148	31,734	35,461	32,948	2,513	34,599	32,818	1,781
14	82,999	84,072	.9909	.9898	34,225	33,865	37,756	34,839	2,917	36,801	34,235	2,566
15	82,802	83,841	.9884	.9877	36,146	34,879	37,767	33,294	4,473	36,937	31,750	5,187
16	82,558	83,557	.9853	.9853	35,667	34,576	39,193	31,913	7,280	38,381	31,471	6,910
17	82,246	83,215	.9819	.9828	34,607	34,078	40,147	33,914	6,233	40,514	33,520	6,994
18	81,843	82,807	.9788	.9806	35,742	35,236	41,703	35,727	5,976	41,707	34,450	7,257
19	81,342	82,326	.9764	.9790	34,777	34,530	41,954	35,143	6,811	40,848	34,068	6,780
20	80,756	81,782	.9746	.9780	34,835	33,370	40,040	33,981	6,059	38,943	33,492	5,451
21	80,109	81,199	.9732	.9774	34,475	33,866	40,443	34,984	5,459	39,530	34,552	4,978
22	79,422	80,597	.9723	.9771	30,402	32,680	39,180	33,956	5,224	38,795	33,805	4,990
23	78,705	79,985	.9718	.9772	28,731	31,373	37,874	33,950	3,924	37,482	32,636	4,846
24	77,965	79,366	.9720	.9777	25,528	31,376	37,952	33,551	4,401	38,328	33,101	5,227
25	77,219	78,754	.9728	.9781	24,548	30,847	32,794	29,560	3,234	35,619	31,932	3,687

Table VII (continued): Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950

Age	L _x Male	L _x Female	SR Male	SR Female	Census Popu- lation 1947 Male	Census Popu- lation 1947 Female	Census Popu- lation 1950 Male	Expected Popula- tion 1950 Male	Residual Male	Census Popu- lation 1950 Female	Expected Popula- tion 1950 Female	Residual Female
26	76,489	78,162	.9736	.9784	23,447	29,278	30,944	27,921	3,023	34,616	30,658	3,958
27	75,790	77,593	.9743	.9784	24,669	31,373	28,382	24,813	3,569	33,938	30,676	3,262
28	75,120	77,033	.9747	.9784	21,456	25,190	26,221	23,880	2,341	33,381	30,171	3,210
29	74,472	76,475	.9748	.9786	21,614	25,446	25,082	22,828	2,254	31,770	28,646	3,124
30	73,839	75,919	.9747	.9788	23,364	26,584	26,857	24,035	2,822	33,796	30,695	3,101
31	73,216	75,372	.9746	.9790	24,009	26,918	21,699	20,913	786	26,941	24,646	2,295
32	72,594	74,836	.9745	.9791	22,729	26,130	22,470	21,069	1,401	27,435	24,901	2,534
33	71,972	74,308	.9745	.9791	24,663	26,734	24,227	22,773	1,454	28,374	26,020	2,354
34	71,354	73,786	.9744	.9791	24,386	25,925	25,191	23,399	1,792	28,879	26,353	2,526
35	70,744	73,269	.9742	.9789	24,464	26,457	24,275	22,149	2,126	27,934	25,584	2,350
36	70,137	72,755	.9739	.9787	24,689	26,343	25,884	24,034	1,850	28,723	26,175	2,548
37	69,528	72,241	.9735	.9784	24,147	25,158	25,377	23,762	1,615	27,893	25,383	2,510
38	68,917	71,725	.9731	.9779	24,026	24,556	26,555	23,833	2,722	28,782	25,899	2,883
39	68,304	71,206	.9724	.9772	23,174	24,147	25,339	24,045	1,294	26,899	25,782	1,117
40	67,688	70,679	.9714	.9766	24,023	23,357	25,147	23,507	1,640	26,255	24,615	1,640
41	67,063	70,137	.9702	.9762	21,672	19,635	24,474	23,380	1,094	25,666	24,013	1,653
42	66,421	69,582	.9689	.9760	21,708	20,482	23,886	22,534	1,352	24,624	23,596	1,028
43	65,755	69,022	.9677	.9757	21,196	19,746	24,119	23,336	783	24,112	22,810	1,302
44	65,065	68,466	.9663	.9750	22,141	19,941	21,456	21,026	430	20,132	19,168	964
45	64,356	67,910	.9645	.9738	22,063	19,933	21,483	21,033	450	21,171	19,990	1,181
46	63,628	67,342	.9624	.9722	21,500	19,936	21,127	20,511	616	20,123	19,266	857
47	62,871	66,753	.9600	.9702	19,503	18,132	22,126	21,395	731	20,583	19,442	1,141
48	62,074	66,133	.9574	.9682	18,750	16,697	21,857	21,280	577	20,736	19,411	1,325
49	61,234	65,471	.9544	.9662	18,981	16,899	21,044	20,692	352	20,000	19,382	618
50	60,354	64,767	.9509	.9644	17,311	14,796	19,269	18,723	546	18,323	17,592	731

Table VII (continued): Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950

Age	L _x Male	L _x Female	SR Male	SR Female	Census Popu- lation 1947 Male	Census Popu- lation 1947 Female	Census Popu- lation 1950 Male	Expected Popula- tion 1950 Male	Residual Male	Census Popu- lation 1950 Female	Expected Popula- tion 1950 Female	Residual Female
51	59,427	64,028	.9472	.9626	16,030	14,230	18,049	17,951	98	16,422	16,166	256
52	58,442	63,259	.9434	.9607	16,034	13,968	18,626	18,115	511	17,183	16,328	855
53	57,391	62,462	.9392	.9584	14,302	12,346	16,569	16,461	108	15,097	14,269	828
54	56,287	61,636	.9341	.9554	12,853	11,740	15,591	15,184	407	14,406	13,698	708
55	55,133	60,775	.9280	.9518	12,657	11,579	15,235	15,126	109	14,038	13,419	619
56	53,903	59,862	.9215	.9479	10,531	9,944	13,541	13,432	109	12,456	11,832	624
57	52,578	58,886	.9146	.9433	11,229	10,575	12,599	12,006	593	11,865	11,216	649
58	51,163	57,847	.9071	.9380	11,633	11,049	12,351	11,746	605	11,979	11,021	958
59	49,669	56,741	.8986	.9320	10,309	10,031	10,224	9,704	520	10,246	9,426	820
60	48,090	55,550	.8894	.9261	8,861	8,729	10,749	10,270	479	11,041	9,975	1,066
61	46,411	54,258	.8798	.9202	6,965	7,781	10,739	10,552	187	10,908	10,364	544
62	44,632	52,884	.8700	.9137	7,354	8,339	9,788	9,264	524	10,003	9,349	654
63	42,769	51,444	.8596	.9064	6,908	8,094	8,304	7,881	423	8,765	8,084	681
64	40,832	49,926	.8487	.8982	6,374	8,088	6,515	6,128	387	7,789	7,160	629
65	38,828	48,321	.8371	.8893	5,905	7,367	6,885	6,398	487	8,349	7,619	730
66	36,765	46,627	.8248	.8796	5,415	7,323	6,320	5,938	382	7,842	7,336	506
67	34,653	44,844	.8118	.8691	4,559	6,174	6,014	5,410	604	8,049	7,265	784
68	32,502	42,973	.7982	.8576	4,298	6,203	5,263	4,943	320	7,263	6,551	712
69	30,324	41,015	.7838	.8452	4,137	6,054	4,736	4,466	270	6,557	6,441	116
70	28,133	38,973	.7686	.8317	3,517	5,503	4,120	3,701	419	6,085	5,366	719
71	25,943	36,854	.7527	.8171	3,225	5,280	3,742	3,431	311	5,875	5,320	555
72	23,768	34,665	.7359	.8013	2,609	4,485	3,613	3,243	370	5,755	5,117	638
73	21,624	32,414	.7184	.7843	2,158	3,893	2,989	2,703	286	5,196	4,577	619
74	19,527	30,114	.7001	.7660	1,856	3,297	2,696	2,427	269	4,545	4,314	231
75	17,492	27,778	.6810	.7463	1,418	2,679	2,121	1,920	201	3,918	3,594	324

Table VII (continued): Japanese Life Table Survival Rates, 1947, and Estimated Net Migration, Osaka, 1950

Age	L _x Male	L _x Female	SR Male	SR Female	Census Popu- lation 1947 Male	Census Popu- lation 1947 Female	Census Popu- lation 1950 Male	Expected Popula- tion 1950 Male	Residual Male	Census Popu- lation 1950 Female	Expected Popula- tion 1950 Female	Residual Female
76	15,535	25,423	.6610	.7253	1,080	2,123	1,740	1,550	190	3,459	3,053	406
77	13,671	23,068	.6403	.7028	840	1,751	1,457	1,299	158	2,869	2,526	343
78	11,912	20,732	.6181	.6789	682	1,584	1,151	966	185	2,387	1,999	388
79	10,269	18,439	.5965	.6535	567	1,463	906	714	192	1,815	1,540	275
80	8,753	16,212	.5734	.6266	445	1,038	678	538	140	1,506	1,231	275
81	7,370	14,075	.5498	.5983	307	862	556	422	134	1,426	1,075	351
82	6,125	12,050	.5254	.5687	268	873	423	338	85	1,224	956	268
83	5,019	10,159	.5011	.5377	217	624	263	255	8	674	650	24
84	4,052	8,421	.4758	.5058	129	388	191	169	22	576	516	60
85	3,218	6,853	.4493	.4726	86	271	157	141	16	614	496	118
86	2,515	5,463	.4231	.4388	57	178	103	109	-6	355	336	19
87	1,928	4,259	.3968	.4043	30	146	51	61	-10	212	196	16
88	1,446	3,239	.3707	.3696	37	123	41	39	2	140	128	12
89	1,064	2,397	.3440	.3346	37	102	20	24	-4	119	78	41
90	765	1,722	.3176	.3002	46	88	12	12	---	50	59	-9
91	536	1,197	.2929	.2665	13	58	14	14	--	48	45	3
92	366	802	.2678	.2344	13	32	11	13	-2	21	34	-13
93	243	517	.2428	.2031	6	26	6	15	-9	22	26	-4
94	157	319	.2229	.1724	5	7	1	4	-3	15	15	--
95	98	188	.1939	.1436	6	5	2	3	-1	15	8	7
96	59	105	.1695	.1238	1	4	1	1	--	7	5	2
97	35	55	--	--	1	4	--	1	-1	4	1	3
98	19	27	--	--	--	5	1	1	--	4	1	3
99	10	13	--	--	--	--	--	--	--	3	--	3
100	--	--	--	--	--	2	--	--	--	1	--	1

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