## Urbanization and Development in Japan

## Overview and Introduction by Toshio Kuroda Urbanization of the Population and Development -- New Tasks- by Toshio Kuroda Demographic Urbanization and Economic **Development** by Yoichi Okazaki Changes in Geographical Distribution of Japanese Population by Atsushi Otomo Fluctuation of Migration Pattern and Human Development by Sumiko Uchino A Components Analysis of Urbanization in Postwar Japan by Tatsuya Itoh **Overpopulation and Depopulation: Problem** by Hiroaki Shimizu of Development

**MARCH 1986** 

The Asian Population and Development Association (foundation)



## ERRATUM

In Table 1 on page 84, Migration rate column on right should be replaced by the column given below.

Table 1 Fluctuations in Total Migration and Intraand Inter- Prefectural Migration (1954 - 1984)

Year	Total migrants <sup>1</sup> )	Migra- taion rate <sup>2</sup> )	Migration within prefectures		Migration Interprefect	ural
			No. of migrants	Migra- tion rate	No, of migrants	Migra- tion rate
,	•					
1954 1955*	5,498,318 5,140,569	6.27 <sup>8</sup> 5.80	3,145,504 2,913,517	3.59 <sup>%</sup> 3.29	2,352,814	2.68 2.51
1956	4,859,625	5,43	2,737,844	3.06	2,121,781	2.37
1957	5,268,248	5.83	2,887,932	3.20	2,380,316	2.64
1958	5,294,291	5,81	2,913,665	3.20	2,380,626	2.61
1959	5,357,658	5.82	2,915,025	3.17	2,442,633	2.65
1960*	5,652,659	6.09	2,972,940	3.20	2,679,719	2.89
1961	6,012,494	6.42	3,060,105	3.27	2,952,389	3.15
1962	6,580,189	6.95	3,277,440	3.46	3,302,749	3.49
1963	6,936,831	7.26	3,464,084	3.62	3,472,747	3.63
1964	7,256,781	7.51	3,622,409	3.75	3,634,372	3.76
1965*	7,380,637	7.56	3,688,404	3.78	3,692,233	3.78
1966	7,431,660	7.55	3,747,962	3.81	3,683,698	3,74
1967	7,478,988	7.51	3,717,721	3.73	3,761,267	3.78
1968	7,775,456	7.72	3,838,042	3.81	3,937,414	3.91
1969	8,125,600	7.97	4,010,024	3.93	4,115,576	4.04
1970*	8,272,511	8.02	4,037,503	3,92	4,235,008	4.11
1971	8,359,711	8.00	4,103,106	3.92	4,256,605	4.07
1972	8,349,840	7,88	4,192,986	3.96	4,156,854	3.92
	(8,416,246)		(4,222,160)		(4,194,086)	
1973	8,538,820	7.87	4,304,482	3.97	4,234,338	3.90
1974	8,026,879	7.30	4,094,492	3,72	3,932,387	3.58
1975*	7,543,506	6.78	3,845,785	3.46	3,697,721	3.32
1976 ·	7,391,627	6.57	3,826,506	3.40	3,565,121	3.17
1977	7,395,319	6.51	3,827,760	3.37	3,567,559	3.14
1978	7,291,505	6.37	3,804,066	3.32	3,487,439	3.04
1979	7,295,465	6,32	3,826,033	3,31	3,469,432	3.00
1980*	7,067,308	6.07	3,710,931	3.19	3,356,377	2.88
1981	6,901,752	5.89	3,583,552	3.06	3,318,200	2.83
1982	6,852,395	5,81	3,564,213	3,02	3,288,182	2.79
1983	6,674,373	5,62	3,478,247	2.93	3,196,126	2.69
1984	6,558,885	5.49	3,422,122	2.86	3,136,763	2.62





# **Urbanization and Development in Japan**

**MARCH 1986** 

The Asian Population and Development Association (foundation)

THE ASIAN POPULATION AND DEVELOPMENT ASSOCIATION, 1986 Nagatacho TBR Building, Rm. 710 10-2, Nagatacho 2-chome, Chiyoda-ku, Tokyo 100 Telephone : (03)581-7770

Printed in Tokyo, Japan

.

#### Foreword

In the recent years, a number of developing countries experiencing adverse population growth and others undergoing demographic transition began to show keen interest in Japan's history of demographic transition, or the change from high birth and mortality rates to low ones.

In response to their interest, last year the Association began to comprehensively analyze the stages of Japan's demographic transition from the perspective of "population and development." Last year's report was focused on agricultural and rural development. The report this year is an attempt to continue the analysis with attention given to urbanization.

Because demography and development are not very well known in the social sciences, an enormous effort by the authors was necessary to formulate the perspective described in this text. I would like to express my most sincere gratitude to them.

The authors would be pleased if this report positively contributes to those organizations and individuals of various countries who are actively involved in population and development-related activities.

In conclusion, I would like to extend our appreciation to the Japan Shipbuilding Foundation (Chairman, Mr. Ryoichi Sasakawa) and United Nations Fund for Population Activities (Executive Director: Mr. R. M. Salas) for their generous assistance.

March, 1986

Tatsuo Tanaka Chairman Asian Population and Development Association ,

### CONTENTS

FOREWORD 1	
OVERVIEW AND INTRODUCTION	
CHAPTER 1 URBANIZATION OF THE POPULATION AND DEVELOPMENT - New Tasks 15	
<ol> <li>Urbanization of the World Population and Development</li></ol>	
2. Stages of the Urbanization of the Japanese Population	
3. Changes in the Structure of Urbanization - Qualitative Changes in Urbanization Based on Population Size of Urban Areas	
4. Large Metropolitan Areas and Human Development	
Conclusion: Age of Nationwide Urbanization and Development	
CHAPTER 2 DEMOGRAPHIC URBANIZATION AND ECONOMIC DEVELOPMENT	
<ol> <li>Correlations of Urbanization and Economic Development</li></ol>	
2. New Stage of Urbanization 40	
(1) Promotes Stabilization of the Migration Rate 40	
(2) Declines in Migration to Metropolitan Areas 41	
(3) Diffusion Phenomenon of Urbanization	
3. Future Prospects and Tasks 43	
(1) Prospects of Urbanization	
(2) Future Tasks 44	

CHAPTER 3 CHANGES IN GEOGRAPHICAL DISTRIBUTION OF	
JAPANESE POPULATION	51
1. Population Distribution by Region and Its Change	53
(1) Changes in Share of Regional Population	53
(2) Regional Population Density and Its Change	56
2. Population Distribution by Prefecture and Its	
Change	57
(1) Changes in Share of Prefectural Population	57
(2) Prefectural Population Density and Its Change	59
Conclusion	59
CHAPTER 4 FLUCTUATION OF MIGRATION PATTERN AND HUMAN DEVELOPMENT	73
Introduction	75
1. Outline of Postwar Migration	76
2. Changes in the Migration Pattern	77
(1) Intra-prefectural and Inter-prefectural	
Migration	77
(2) Analysis of Inter-prefectural Migration	
Patterns	77
(3) Termination of Period of Concentrated	
Migration to Metropolitan Areas	78
(4) Characteristics and Changes in Migration	
Patterns of the Female Population	79
(5) So-called "U-turn" Migration	80
3. Migration and Development	81

CHAPTER 5 A COMPONENTS ANALYSIS OF URBANIZATION IN
POSTWAR JAPAN 93
Introduction
1. Population Urbanization and Its Factors
(1) Factors of Population Urbanization
(2) What is an "Urban"? 95
2. Trends in Population Urbanization in Japan
3. Components of Urbanization in Japan
(1) Population Urbanization Caused by Expanding
Shi-areas
(2) Natural Increase and Social Increase as
Factors of Ordanization
(3) Analysis of the Indirect Effects of Migration
4. Conclusion 101
CHAPTER 6 OVERPOPULATION AND DEPOPULATION: PROBLEM
OF DEVELOPMENT
Introduction
1. Conceptualization of Overpopulation and
Depopulation 109
2. Demography of Overpopulation and Depopulation 110
3. Overpopulation and Depopulation in Metropolitan
and Local Areas 111
(1) General Trend in "Overpopulation and Depopulation" in Metropolitan and Local Areas 112
(2) Overnonulation and Denonulation in
Metropolitan Area
- Case Study of Tokyo Metropolis
(3) Overpopulation and Depopulation in Local
Areas - Case Study of Miyazaki Prefecture

.

-

•

## OVERVIEW AND INTRODUCTION

Toshio Kuroda Director Emeritus Population Research Institute Nihon University

. • ı

#### Overview and Introduction

Urbanization in the future represents an important determinant of the world in the future. The reason is that urbanization means the transition from agrarian society, characterized by the cultivation of to industrial land and self-supporting, society, characterized by dominant people living in urban sector with employment in non-agrarian work sectors. Urbanization, accompanied by modernization of labor pattern and life styles, has a significant impact on human behavior and and results in the transition to an extremely urbanized consciousness, society never before experienced in the past.

It is reported that around 1800, less than 3% of the world population lived in cities. (\*1) However, in 1980, 40% of the population lived in cities, and it is project that at the end of this century in the year 2000 almost half the world population (48.2%) would be inhabiting urban environments. (\*2)

However, the percentage of the population of urban settings in all advanced countries has already exceeded 70%, and especially in northern the rate is as high as 90% (87.0%), indicating that urbanization Europe, has reached a high level. On the other hand, the urban population of the developing countries in 1985 was only 32% on the average (United Nations' estimate, 1982), and there are numerous countries, in which the rate is below 20%, indicating only low-level urbanization. The number of countries having a rate of urbanization below 10% was 27 in 1960, but 20 years later in 1980, it had declined to 10. Subsequently, urbanization has been progressing rapidly even in the developing countries. The fact suggests that the social and economic structures have undergone several types of change and that urbanization should be viewed as a serious developmental issue. As previously mentioned, high-level urbanization has occurred in the developed countries, but accompanying this trend is a structural change in the form of population redistribution, which is reflecting changes in the urban social system. The process of urbanization is, in this way, a multi-faced development process and it has become necessary to study each element involved in this process. (\*3)

Urbanization is closely related to modernization. It is a vehicle and a result of the modernization process and thus it plays an important role in the development. The positive side of urbanization is that it has contributed importantly to development, but it also has a negative side. In Japan too, adverse effects have been caused by urbanization. One is an aggravated living environment resulting from the excessive concentration of industries and people in metropolitan areas, and another is the decline in economic efficiency in the metropolis (outer diseconomy).

The negative effects of urbanization are generally exerted by its rapid speed and not by the high standards brought about by the process.

As it is often the case in developing countries, should urbanization progress rapidly accompanied by a substantial increase in population, demand for urban services such as housing increases enormously, but such demand is extremely difficult to meet.

The urbanization process is caused mainly by rural-urban migration. Migrants who have moved from agricultural villages to urban centers, achieve improved standards of social and economic status. Additionally, it is assumed that society would enjoy certain social benefits generated by the urbanization process, which offset the social costs of urbanization.

the rate of urbanization, which is an indicator of the Next, urbanization process, is studied. This rate reflects the growth of the urban population in percentage, but it is only the mean average of the overall populations of all urban areas combined. In other words, it does not indicate the characteristics of the urban structure nor urban population distribution by city size. Even when the urbanization rate if urban growth is concentrated in a primate city, increases slowly, urbanization would probably have a negative impact on the said city. This is a phenomenon observed in many developing countries. Since non-major or secondary cities are extremely small, if urbanization is concentrated in the primary city, it would not only have a serious social and economic impact on this primate city, but would also expand regional differences in social and economic opportunities, resulting in a major obstacle for development.

Thus, concern on the part of governments over urbanization is currently increasing, and this was clearly seen in the 5th questionnaire survey on population conducted by the United Naions in 1983. (\*4) According to the results of this survey, the number of countries, which replied that their population distribution was appropriate amounted to only 3 among the 126 developing countries surveyed. Subsequently, virtually all developing countries were seen to be aware of the necessity of political measures against urbanization as exhibited in the aggravated imbalance in the respective population distributions.

Urbanization is an unavoidable consequence of modernization, but both advanced and developing countries are presently seeking new developmental schemes appropriate to the respective requirements.

In this text, Japan's experiences of the urbanization of its population and development are analyzed from an international perspective, and the authors hope to contribute to the research in this field as well as assist policy formulation in the Asian nations.

The text is composed of the following 6 chapters.

Chapter 1 Urbanization of the population and Development -New TasksChapter 2 Demographic Urbanization and Economic Development
Chapter 3 Changes in Geographical Distribution of Japanese Population
Chapter 4 Fluctuation of Migration Pattern and Human Development
Chapter 5 A Components Analysis of Urbanization in Postwar Japan
Chapter 6 Overpopulation and Depopulation: Problem of Development

Chapter 1 attempts to clarify the significance of the "urbanization of the population and development," which is the theme of this text, assuming that it is presently a worldwide phenomenon. Also, an introductive analysis of the urbanization of the Japanese population is conducted. The historical developments and future prospects (up to 2025) of the world's urban population as well as an analysis of the urban population by advanced and developing nations are also presented. The significant aspects of this chapter are the importance of the perspective on changes in the urban population and the importance given to the classic concept of "urbanism as a way of life," which may be newly applied to the current urban society by grafting into new order.

Concerning the urbanization of the Japanese population, the process of urbanization over a period of approximately 100 years from the Meiji Era (1868 - 1912) to the present is divided into 4 stages. Furthermore, the structural changes in urbanization in view of the population size of cities and finally population changes in the metropolitan areas are analyzed from the perspective of human development.

Chapter 2 takes up the relationship between urbanization of the population and economic development. It shows the existence of a strong correlation between economic development and the pace of urbanization in both the prewar and postwar periods. By analyzing the population density in terms of inhabitable areas and the economic density in terms of net prefectural production in value, it becomes clear that the economic density of Tokyo, which has an extremely high population density, is considerably greater when compared with the surrounding Saitama, Chiba and Kanagawa Prefectures.

Furthermore, this chapter describes in three different ways how urbanization is influenced by the level of economic development: 1) shift to a declining trend from one of increase in the migration rate; 2) decreases in migration to metropolitan areas; and 3) the diffusing tendency of urbanization. Lastly, the future aspects of urbanization are described, including the prospect that urbanization made possible by people migrating to urban areas will decelerate, while urbanization caused by factors other than migration (natural increase) will become more significant. It also underlines the necessity of consolidating the living environment especially for the aging society.

Chapter 3 deals with fluctuations in regional population distribution. The characteristics of postwar changes in the regional distribution of the Japanese population are analyzed from two viewpoints; one is population distribution by eleven areas, and the other, population by prefecture. Changes in regional distribution are also identified using relative population and population density. Regarding relative population during the postwar period from 1950 to 1984, only Minami-Kanto recorded constant increases, but the population of 3 metropolitan areas including Nishi-Kanto and Tokai areas increased from 36.8% of the national population in 1950 to 50% in 1984, or real number of 60.12 This suggests that the regional distribution of the population million. has continuously exhibited a trend of imbalance. As for population density, there were only 3 areas, specifically Minami-Kanto, Nishi-Kinki and Tokai, in which population density in 1984 exceeded that of 1950. is attributable to the fact that the degree of population This concentration within these 3 metropolitan areas underwent relative increases. for changes in population distribution by prefecture, As regional variations for population concentration are larger when compared those for population distribution of the 11 areas, and the gap continues to widen.

Chapter 4 considers the changes in migration patterns and development problems. Firstly, it takes up the relationship between migration and development, and positive and negative effects of migratory movements. Secondly, 3 aspects of postwar migration in Japan, i.e., changes in the number of migrants and migration patterns, relationship between migration and development, are studied. Migration patterns are analyzed from 5 different perspectives: (1) inter-prefectural and intra-prefectural migration; (2) 4 regional types of inter-prefectural migration patterns; (3) end of the era of concentrated in-migration into metropolitan areas; (4) characteristics and changes in the migration patterns of the female population; and (5) U-turn migration. Lastly, the relationship between migration and development is analyzed from the viewpoints of education, age, urbanization and health, and the need for correlating the studies of development problems and population is emphasized.

Chapter 5 deals with the factors believed to cause fluctuations in the regional populations. Regional populations are influenced by natural increases and migratory movements, in other words, balances between the number of births and deaths and differences between the number of in-migrants and out-migrants. It analyzes the factors assumed to affect the urban population in relationship to urbanization, a theme of the current text. Such variables as the expanding trend of urban areas themselves and the transition of agrarian villages into cities as factors other than natural increase and increases due to migration are studied. Statistics are utilized to summarize urban population increases resulting from the impact of the two variables just mentioned. Of particular interest are the percentages calculated for population growth caused by an administrative factor in the form of the expansion of urban areas in relation to the overall increase in the urban population. The figures for the population increases computated are then categorized into natural increase and increases due to migration, inclusive of the percentages for both types of increases for the metropolitan as well as non-metropolitan

areas for each 5-year period from 1955 to 1980. Net migration accounted for more than 50% of the increases in urban population in the 1955-1960 and 1960-1965 periods. Nevertheless, it began to decline considerably after 1965, shifting to record a minus 1.5% in the period of 1975-1980. Population growth in the metropolitan areas at the present is exclusively due to natural increases. During the 25-year period from 1955 to 1980, increases due to migration accounted for roughly one-third (35.3%) of the population increases in the metropolitan areas, while natural increases shared slightly less than two-thirds (64.2%) of the total.

the indirect effects of migration are taken up, i.e., Next, the birth and mortality rates of in-migrants to the metropolitan areas, which are also calculated and studied in terms of their contributions to the natural increases. According to the results of calculation, 2.61 million people out of the natural increase total of 14.81 million in the 25-year period between 1955 and 1980, or 17.6% of the total number, were accounted for by in-migrants during this same period. Consequently, the percentage of migration in the total population increase during this but actually 52.9%, and is thus a larger period is not 35.3%, contribution in terms of the simple natural increase. Furthermore, since there would not be many individuals remaining in the non-metropolitan areas, who can migrate out, the concentration of the population in the metropolitan areas may not be expected to undergo further increase.

Chapter 6 considers the population and development-related issues of overpopulation and underpopulation. The chapter includes a review of the theory on over- and underpopulation during the postwar period of high-economic growth and the intensification of migration, and then continues on to compare and analyze the conditions of overand underpopulated areas in both the metropolitan and non-metropolitan areas. the conceptual definitions of over- and underpopulation are Firstly, studied. To present concrete data, Tokyo Metropolitan, as а representative model of metropolitan areas, and Miyazaki Prefecture, which shifted to record an increasing trend of population during the first half of the 1970s, are respectively analyzed. Areas considered to represent overpopulated and underpopulated situations are selected from both Tokyo and Miyazaki Prefecture, and such significant variables as population fluctuation, especially in terms of the resident population day-time population as well as the age structure, the percentage of and the aged population in particular, are analyzed.

As for Miyazaki Prefecture, the city of Miyazki and Kiyotake town were selected as representative of overpopulated areas, and the villages of Nishimera and Kitago have been selected as representative of the underpopulated areas. Demographic analyses, including those of natural increase, household composition, day-time and resident population and the rate of population aging, were conducted, and the following significant results were produced.

- (1) Situations whereby the number of temporary in-migrants (in-migrants commuting to offices and schools) exceeded that of temporary out-migrants (out-migrants commuting to offices and schools), or reverse cases were observed in both the over- and underpopulated areas.
- (2) When the number of temporary in-migrants exceeds that of temporary out-migrants, the age structure of the day-time population becomes younger, in the reverse situation the day-time population becomes older.
- (3) When there is a significant difference between the number of temporary in-migrants and out-migrants, the age structures of the resident and day-time populations exhibits considerable variance, especially regarding the percentage of the aged population.
- (4) In drawing up developmental policies for over- and underpopulated areas, consideration must be given not only to the resident population, but also to day-time population.

The above represent the objectives of this text, and are brief The theory of urbanization is today's new summaries of each chapter. theme requiring interdisciplinery and international research. Especially, research on the relationship of urbanization and development is virtually unexplored today. Authors of this study attempted to analyze this new research with particular attention given to the case of Japan, and it is no exaggeration to state that it was a totally new challenge. We are extremely happy to see that new findings and viewpoints of analyses have been suggested, in spite of the fact that they may still be incomplete.

#### Notes

- (\*1) P.M. Hauser and Robert V. Gardner, 1. Urban Future : Trends and Prospects, in Population and The Urban Future, State University of New York Albany, 1982, United Nations Fund for Populations Activities, p.1.
- (\*2) United Nations, World Population Trends, Population and Development Interrelations and Population Policies, 1983 Monitoring Report, Volume 1 Population Trends, 1985, p.182.
- (\*3) United Nations, World Population Trends, ....., 1985, p.181.
- (\*4) United Nations, World Population Trends, ....., 1985, pp.15-17.

## CHAPTER 1

# URBANIZATION OF THE POPULATION AND DEVELOPMENT

.

– New Tasks –

\_\_\_

Toshio Kuroda Director Emeritus Population Research Institute Nihon University

.

#### 1. Urbanization of the World Population and Development

The future of the urban population has become today's new theme, is assumed to be an important trend, which shall significantly and affect the world's future. It can be said that the urban population in the past had virtually no influence on the world's future because the urban population was extremely small. Even in 1880, the urban population accounted for less than 3% of that of the world. (\*1) However, it is estimated that urban population increased from approximately 20% of the world population in 1920, to 36.9% in 1970, continuing to approach the 50% level (48.2%) in around 2000. In 2025, it is anticipated that almost two-thirds the world population (62.5%) will be concentrated in the urban areas (refer to Table 1). (\*2)

The average of the annual growth rate of world population is currently 1.7%, but the annual growth rate of world's urban population has reached 3%. It is a significant fact that the urban populations of the developing countries are increasing at an annual rate exceeding 4%.

The rate of urbanization (percentage of urban population to total population) in the developing countries is 32% even in 1985, and is less than half of that of the advanced countries (72%). However, the remarkable advancement of urbanization in the developing countries as previously-mentioned is anticipated to result in significant changes in the social structure. Subsequently, the process of urbanization in the developing countries has become one of the most significant problems related to development.

urbanization has already reached a In the advanced countries, remarkably high standard, and, as a result, the rate of urbanization has undergone substantial deceleration. Nevertheless. urbanization and development are also important issues for the advanced countries. The level of urbanization of the highly urbanized societies of the advanced countries is not expected to decline in the future, but the urban system may be modified due to changes in the distribution structure of the urban population. The population growth rate of the metropolitan areas has decreased substantially or shifted to show decreases in numerous advanced countries. This phenomenon suggests a shift in the trend from populations concentrated in the metropolitan areas to population dispersion, and can be characterized as the so-called "urban turn-round" phenomenon. (\*3)

It should be noted that increases in the percentage of the urban population are referred to in this study as the process of urbanization, but it is only indicative of the average of all urban areas and does not represent the urban structure viewed from urban population distribution by different sizes of population of urban places. For example, suppose country A has an urban population of 10 million, 5 million of which are concentrated in large cities and the remaining 5 million are dispersed

throughout numerous smaller cities without any medium-sized cities, while in country B, its 10 million inhabitants are dispersed throughout medium and small cities, forming a pyramid-type urban social large, structure. In a relatively large number of developing countries, populations greatly concentrated in primate cities, making the size of the second largest city very small (as is the case in Thailand). In such a situation, numerous serious problems in the social, economic and political sectors become manifested in the primate cities, and regional disparity of social and economic opportunities becomes extremely wide, creating serious obstacles for realizing development. The author refers to such a diversification of population distribution caused by urbanization, the qualitative structure of urbanization.

Such terms as 'urbanization' or 'urban population' are used as demographic concepts to indicate a population agglomeration of a given minimum size. Nevertheless, urban place is not simply a clumping of population, but is viewed as unit of analysis of much greater significance. Urban areas are also physical construct created by human beings; form the base of economic activities; represent a form of social organization; the site in which demographic activities occur, especially as a milieu for human behavior in which human reproduction behavior is affected, which in turn account for various population trends; and also the location of important political and administrative units. Moreover, these urban centers also possess numerous organizations and bodies that are extremely important because of the opportunities they offer for the further development of human abilities.

All these facets of urban areas are embodied in the words of Wirth; "Urbanism as a Way of Life." (\*4) Urbanization has resulted in many revolutionary changes in the human life, and subsequently Wirth's classic insight can be reviewed in relationship to the realities of the urban society we observe today.

During the meetings of the United Nations' International Population Conference held in Mexico City in August 1984, "Mexico City Declaration on Population and Development" was officially adopted. In relationship to urbanization, the Declaration states as follows: "Rapid urbanization will continue to be a salient feature. By the end of the century, 3 billion people, 48% of the world's population, might line in cities, frequently very large cities. Integrated urban and rural development strategies should therefore be an essential part of population policies. They should be based on a full evaluation of the costs and benefits to individuals, the groups and region involved, should respect basic human rights and use incentives rather than restrictive measures." (\*5)

According to the results of the Fifth Population Enquete conducted by the United Nations in 1983, only a mere 3 of the 126 developing countries surveyed responded that their spatial distributions of population were balanced or appropriate. Furthermore, the three countries responding in this manner were seen to be small island nations; namely, Barbados, Malta and Nauru. Almost all developing countries surveyed were aware of the necessity to implement certain policy measures to cope with intensified urbanization, which the great imbalance in population distribution is symbolic of.

The rate of urbanization of the developing regions of the world in terms of percentage was under 30% even as recent as 1980, but their actual number urban populations exceeded that of the advanced regions, which have been enjoying very high rates of urbanization. The absolute number of the urban population in the developing regins was more numerous by 170 million than that of the advanced regions (see Table 1). Also, the urban populations of the developing regions of the world are expected to increase sharply, reaching 1.96 billion, or twice that of the urban populations of advanced regions (992 million). In other words, it is no exaggeration to say that the focus of the world's urbanization process is on the developing countries.

The intensification of urbanization in the developing countries was mainly the result of migration from rural to urban areas by large numbers of individuals. Taking a concrete example, during the 25-year period beginning from 1925 and ending in 1950, a minimum of 100 million people, or roughly around 10% of the rural population in 1925, migrated from rural villages to cities in the developing countries. Also, in the next 25 years, migrants from rural to urban areas were estimated to number 330 million, almost 25% of the overall rural population of the developing countries during 1950. If this rural to urban migration is in fact the major factor of urbanization, quite obviously well-balanced and comprehensive development policies centering on both the rural and urban areas are absolutely essential.

#### 2. Stages of the Urbanization of the Japanese Population

First of all, the historical development of Japanese urbanization is reviewed. The author assumes that the term urbanization of the population will be discussed in detail by other authors, but its usage here is traditional or referring to the population residing in cities defined administratively. Table 2 shows the percentages of the urban population to the total population since Meiji period. As for the urban population itself, more accurate definition has been used by the Statistics Bureau since 1970 based upon the concept of Densely Inhabited Districts (D.I.D.). These data as well as figures estimated by Atsushi Otomo for the periods prior to 1970 are presented in the below. (\*6)

The development of urbanization over a period of just more than 100 years from the start of modernization in the early years of the Meiji Era up to the present can be divided into several stages. The process of urbanization is divided into the following 4 stages based on the urbanization rate: (1) 0 - 25%, (2) 25 - 50%, (3) 50 - 75% and (4) 75%

and above.

The first stage is agrarian society, in which agriculture or primary industry was dominant. This is the initial stage in which industrialization begins, cities start to develop and urbanization progresses but slowly. It covers approximately 60 years from the beginning of Meiji Period until 1930, and during this period, the percentage of the urban population increased from about 10% to 24% (1930). The percentage of workers engaged in primary industry declined from more than 80% to approximately 50%.

The second stage covers approximately 25 years from 1930 to 1955 in the postwar period. The rate of urbanization rose from 24% to 56%, and this stage can be called the first period of urbanizing society. The percentage of the urban population exceeded 50%, and, on the contrary, the percentage of workers engaged in primary industry dropped below the 50%-level to record 41%, reflecting the steady advance of urbanization.

The third stage is the period of intensified urbanization. The percentage of the urban population increased from 56% in 1955 to 72% in 1970, reaching the standard of the advanced countries in only 15 years. The percentage of workers engaged in primary industry declined from 41% in 1955 to below the 20%-level, or 19.3% in 1970. This was the maturation period of urbanization in Japan.

The fourth stage is period following 1975, during which the percentage of urban population attained a high level of more than 75%, and the percentage of workers engaged in primary industry dropped to a low level of 10% or even less. At the same time, this was the period of so-called social innovation, during which dominant industries shifted to more sophisticated industrial activities, the service industry, and industrial society underwent a transition to post industrial society. It suggests a society of new dimensions, which may be called urbanized society, which should be differentiated from urbanizing society of up to the third stage of urbanization.

The rates of urbanization is shown in Figure 2. The percentage of dropped in 1945 due to evacuation and urbanization temporarily dispersion of the population and factors caused by the effects of World War II. However, it again turned to record increases after the war, and in 1955, the highest rate of urbanization achieved in the prewar period Thereafter, the percentage rose remarkably. was again achieved. Recently, however, the growth of the urbanization rate has slowed. The trend can be expressed roughly by a logistic curve, and it can be said that urbanization is currently approaching a stage of stagnancy. The rate of urbanization exceeding 75% can be considered a nationwide diffusion of urbanization, and as mentioned earlier, today's society may appropriately be referred to as urbanized society.

- 3. Changes in the Structure of Urbanization
  - -- Qualitative Changes in Urbanization Based on Population Size of Urban Areas --

As mentioned in the previous section, the urbanization of Japan's population after World War II has been characterized by increases in the urban population, i.e., substantial growth in the percentage of the urban population as well as concentrated increases of population in large cities like Tokyo and Osaka or those of large metropolitan areas. However, such a qualitative structure of urbanization has begun to show changes shifting from the metropolitan-oriented stage to the so-called medium-scale city-oriented stage.

Fluctuations in population, growth rate and percentage distribution of cities, towns and villages by group of population size are shown in Table 3.

When analyzing the growth rate of the urban area population by while it has been declining recently on the whole, it is size, noteworthy that giant cities with populations exceeding 1 million and cities with populations of less than 50,000 experienced small substantial declines in their increase rate. The growth rates for the populations of the 4 groups of cities with 50,000 to 500,000 residents all exceeded the 7%-level (during the 5-year period between 1975 and that of large cities with populations larger than 1 1980), however, million residents was only 0.1%, and that of cities with populations of 30.000 to 50,000 was 2.9%. It is observed then that both have a lower growth rate when compared to that of the overall urban population (4.8%).

Such fluctuations in the population growth rate are analyzed on the basis of percentage distribution by size of places in relationship to the total population. In order to facilitate the analysis of changes in population distribution, urban areas are divided into 3 broad groups of populations larger than 500,000, 100,000 to 500,000 and less than 100,000. The fluctuations are summarized in Table 4.

It is clear from the above table that in 1960, the urban population were distributed almost equally in cities having these 3 population sizes, i.e., in small, medium and large cities. However, over the past 20 years, the percentage of the population of small cities declined considerably, and that of large cities became nearly constant (especially since 1970). To the contrary, that of medium-size cities increased substantially. The percentage of population of these medium-sized cities increased from 20.7% in 1960 to 31.6% (increase rate, 52%).

In addition to the urban population, that of towns and villages are presented in Table 4 to represent the rural population. The table

clarifies that the rural population has been exhibiting a constant declining trend.

Table 5 illustrates the changes in the distribution structure of urbanization in the first half of the 10-year period between 1960 and 1970 and the latter half peroid of another 10-year period between 1970 and 1980. Remarkable changes are observed between the first and latter halves. The first-half period is characterized by rapid increases in the populations of medium and large cities and sharp declines in the populations of small cities and rural villages. The populations of large cities with populations exceeding 500,000 increased by about 7 million in the first-half, recording a growth rate of 37.5%. The population of medium cities grew by 8.85 million, registering a growth rate as high as 45.3%. On the other hand, that of small cities declined by 28,000 (decrease rate of 0.1%), and those of rural villages droped by 5.40 million (decrease rate of 15.6%), exhibiting a trend in the opposite direction to those of medium and large cities. These 10 years during which the populations of small can be said to be a period, towns and villages were greatly absorbed in medium and large cities. cities.

However, during the latter half of the 10-year period between 1970 and 1980, new developments are observed. A remarkable change is a trend of sharp increase in the populations of medium-sized cities. The growth rate of populations of large cities suddenly dropped from 38% of the first-half to 14%, and that of small cities recorded a mere 6.9%, increase from decrease in the first-half. shifting an to The populations of towns and villages continued to record a decrease rate of although the growth rate of the population of 4.7%. Meanwhile, medium-sized cities decreased from 45.3% of the first-half to 30.4%, it still maintained a high level increase rate, expanding by 8.6 million. This strong absorptivity of populations exerted by medium-sized cities was observed during the 10-year period of the first-half. Even in the latter half, medium-sized cities exhibited an increasing tendency, which should be differentiated from the trends of substantial drops shown by other group cities. This seems to represent the arrival of the age of medium-sized cities.

Such increases in the percentage distribution of the populations of medium-sized cities becomes much clearer when analyzing the distribution of the urban population alone excluding rural population, as shown in Table 6. The population distribution of medium-sized cities rose from 32.7% in 1960 to 41.5% in 1980, registering a much larger rate than those of large (32.5%, 1980) and small cities (25.9%, 1980). 4. Large Metropolitan Areas and Human Development

migration has played an important role in the Needless to say, increases of the urban population. When analyzing all 3 large metropolitan areas, the net in-migration figure taken up here, (subtracting the number of out-migrants from that of in-migrants) reached approximately 8 million in the 16 year-period between 1954 and 1969 (see Table 6). The net in-migration was as high as approximately 500,000 on the annual average. Since the 3 large metropolitan areas play a major role in the cultural, industrial, political and in other fields, the percentage of population with high educational backgrounds and special skills among in-migrants is high.

It is clear that the percentage of population possessing high-quality characteristics, not only among in-migrants but also among permanent residents is much higher as compared with the populations of non-metropolitan areas. Furthermore, even though not included among the migrants category, temporary in-migrants for reasons of training, research or meetings, are concentrated especially in large cities. In other words, large cities play an important role as locations for human development. However, the number of net in-migrants has recently dropped almost to zero, and it should be welcomed that sites for human development opportunities have been provided energetically in even non-metropolitan areas.

On the other hand, it should be noted that although the rates of in-migration and out-migration to and from the 3 metropolitan areas became almost equal, and occaionally even net out-migration being recorded (see Table 7), the rate of total migration combining the number of in-migrants and out-migrants is still extremely high despite the fact that it has been exhibiting a declining trend.

In the decade of the 1960s, the number of gross (in-migrants + out-migrants) migrants rose from 1.5 million to 20 million per year, and remained at this level from 1969 to 1973, and then it shifted to a declining trend. However, the number of gross migrants is still as high as 1.5 million today. On the basis of simple calculation, if the number of migrants to and from the 3 metropolitan areas is 2.0 million, it would total 60 million in 30 years, meaning that the half of the total population of Japan is replaced between the metropolitan and non-metropolitan areas in 30 years. If the number of in-migrants and out-migrants is equal, migration is no more factor to bring about increases in the population of the 3 metropolitan areas, but enormous amount of gross migration would mean continued substantial impact of qualitative changes and exchanges of the population. Consequently, in-migration to and out-migration from the 3 metropolitan areas must be considered from the perspective of human development, because these migrants include many highly educated and professiol people.

Conclusion: Age of Nationwide Urbanization and Development

Japanese population is nearing the stage of The nationwide The percentage of the urban population increased to 76% urbanization. and even when based on a strict definition in 1980, of the D.I.D. whereby only built-up areas are recognized as urban areas, the percentage of the D.I.D. population was as high as 60% in that year. It is estimated that the urban population would further increase to account for 79.3% of the total population in 2000, and thereafter 86.4% in Wirth's concept of "Urbanism as a Way of Life," which has 2025. (\*7) already become a classic expression, may once again become significant in terms of the nationwide urbanization, of present-day society.

Successful modernization has created a new bright society characterized by urbanization. However, it has not assured an unconditionally bright future. Although urbanization was an unavoidable and natural product of modernization, on the other hand, it has not only aggravated the natural and social environments but also created an unfavorable economic environment by producing new inconsistencies. Consequently, the transformation of today's urban society having such inconsistencies to a new form of urban society with a new social order, which guarantees a quality of rich and secure life, and allows human development and stable human reproduction activities is a task for all societies today.

Year	World	Developed areas	Developing areas
	Urban Population	(Unit: 1 million	persons)
1920	360.0	260.0	100.0
1930	450.0	315.0	135.0
1940	570.0	385.0	185.0
1950	712.1	444.0	267.6
1960	1,012.1	572.7	439.4
1970	1,361.0	695.0	666.0
1980	1,776.0	800.0	974.0
1990	2,286.0	897.0	1,389.0
2000	2,952.0	992.0	1,959.0
2010	3,761.0	1,080.0	2,681.0
2025	5,107.0	1,192.0	3,915.0
	Urban	Population (%)	
1920	19.4	38.7	8.4
1930	21.8	41.6	10.3
1940	24.8	46.9	12.5
1950	28.4	51.8	16.2
1960	33.9	58.7	21.9
1970	36.9	66.4	25.2
1980	39.9	70.6	29.4
1990	43.6	74.2	34.4
2000	48.2	77.8	40.4
2010	53.8	81.2	47.3
2025	62 5	95 /	57 7

#### Table 1 Changes in Urban Population in the World and by Developed and Developing Areas

Source: Up to 1960 : "Population and the Urban Future" (Note 1), p.3; Since 1970 : "United Nations, World Population's Trends, Population and Development Interrelations and Population Policies, 1983, Monitoring Report, Volume 1, 1985, p.182, Table 65."

Year	Percentage of urban population	Percentage of D.I.D.s		
1898	11.9 <sup>%</sup> *	8		
1903	13.0 *			
1908	14.5 *			
1913	15.6 *			
1920	18.0	30.2**		
1925	21.6			
1930	24.0	33.7**		
1935	32.7			
1940	37.7	36.4**		
1945	27.8			
1950	37.3	33.8**		
1955	56.1	38.5**		
1960	63.3	43.7**		
1965	67.9	48.1**		
1970	72.1	53.5		
1975	75.9	57.0		
1980	76.2	59.7		

Table 2 Trends in Japan's Urbanization

Source: Figures with \* marks are estimates by Minami (Minami, Ryoshin, "Economic Development in Japan" Toyo Keizai Shinpo, 1981, p.216). Those with \*\* marks are estimates by Atsushi Otomo (1980 National Census Monograph Series No.3 of the Statistics Bureau of the Prime Minister's Office, "Regional Distribution of Japanese Population and Its Changes" 1983, p.60)

Population size	No. of cities, towns and villages (1980)	Population (1,000 persons)				Growth rate of population			Percentage of population						
		1960	1965	1970	1975	1980	1960- 1965	1965- 1970	1970- 1975	1975- 1980	1960	1965	1970	1975	1980
Total	3,256	94,302	99,209	104,665	111,940	117,060	5.2	5.5	7.0	4.6	100.0	100.0	100.0	100.0	100.0
City	647	59,678	67,356	75,429	84,967	89,187	9.9	8.7	8.7	4.8	63.2	67.9	72.1	75.9	76.2
Unit: 1,000															
1,000 and above	10	16,688	19,398	20,856	23,265	23,298	9.1	3.2	2.5	0.1	17.7	19.6	19.9	20.8	19.9
500 - 1,000	9	1,804	3,405	4,562	4,462	5,743	24.6	14.1	14.9	6.2	1.9	3.4	4.4	4.0	4.9
300 - 500	36	4,262	5,582	7,890	11,995	13,709	13.9	13.1	13.6	7.4	4.5	5.6	7.5	10.7	11.7
200 - 300	42	5,357	6,674	10,078	9,579	10,345	14.8	17.3	12.6	7.6	5.7	6.7	9.6	8.6	8.8
100 - 200	96	9,914	10,922	10,416	12,209	12,965	16.9	15.0	12.7	7.0	10.5	11.0	10.0	10.9	11.1
50 - 100	207	10,489	11,312	12,012	13,797	14,115	7.8	10.6	11.9	7.4	11.1	11.4	11.5	12.3	12.1
30 - 50	198	10,687	9,302	8,416	8,454	7,764	- 1.0	0.3	4.7	2.9	11.3	9.4	8.0	7.6	6.6
Less than 30	49	477	762	1,197	1,207	1,248	- 8.6	- 8.5	- 5.4	- 1.8	0.5	0.8	1.2	1.1	1.1
Towns & villages	2,609	34,622	31,853	29,237	26,972	27,873	- 3.6	- 1.9	1.8	4.0	36.8	32.1	27.9	24.1	23.8
More than 30	59	1,299	1,725	2,009	1,344	2,278	33.3	41.4	37.4	24.1	1.4	1.7	1.9	1.2	1.9
20 - 30	229	6,668	5,903	5,081	5,184	5,536	0.3	3.2	8.0	8.2	7.1	6.0	4.9	4.6	4.7
10 - 20	809	16,719	14,092	12,337	11,341	11,277	- 4.2	- 2.7	1.6	3.4	17.8	14.2	11.8	10.1	9.7
5 - 10	964	8,763	8,835	8,300	7,438	7,051	- 8.3	8.0	- 3.7	- 1.1	9.3	8.9	7.9	6.6	6.0
Less than 5	548	1,173	1,298	1,509	1,666	1,731	-13.4	-14.0	- 9.2	- 5.0	1.2	1.3	1.4	1.5	1.5

#### Table 3 Fluctuations of Population of Cities, Towns and Villages by Population Size

Source: Population as of October 1 of each year derived from the "National Census Report" of the Statistics Bureau of the Prime Minister's Office.

1) Special Ward of the City of Tokyo is calculated as 1 city.

 Fluctuations at the end of the period by areas of different population scale (within each 5-year period).

3) Okinawa excluded from data.

Size of city	1960	1965	1970	1975	1980
Population of more than 500,000 (Large cities)	19.6	23.0	24.3	24.8	24.8
100,000 - 500,000 (Medium-sized cities)	20.7	23.3	27.1	30.2	31.6
Less than 100,000 (Small cities)	22.9	21.6	20.7	21.0	19.8
Towns + villages	36.8	32.1	27.9	24.1	23.8
Total	100.0	100.0	100.0	100.0	100.0

Table 4 Structural Changes of Urbanization

Derived from Table 3.
Size of urban population	Popula (1,00	Population (1,000)		1960 - 70		Population (1,000)		1970 - 80	
	1960	1970	No. of increase/ decrease	Rate of increase/ decrease	1970	1980	No. of increase/ decrease	Rate of increase/ decrease	
Large city	18,492	25,418	6,926	37.5%	25,418	29,031	3,613	14.2%	
Medium city	19,513	28,384	8,851	45.3	28,384	37,010	8,626	30.4	
Small city	21,653	21,625	∆ 28	Δ 0.1	21,625	23,127	1,502	6.9	
Towns & villages	34,622	29,237	∆5,385	∆15.6	29,237	27,873	∆1,364	∆ 4.7	

Table 5 Characteristics of Changes in Urban Population in Two Periods Between 1960 and 1970, and 1970 and 1980 by Three Population Sizes

Source: Derived from Table 3.

∆ marks indicate decrease.

Size of Population	1960	1970	1980
Large cities (with population of more than 500,000)	31.0	33.7	32.5
Medium cities (with population of 100,000 - 500,000)	32.7	37.7	41.5
Small cities (with population of less than 100,000)	36.3	28.6	25.9
Total	100.0	100.0	100.0

Table	б	Changes	in Distrib	ution	of	Urban	Population	by
		Size of	Population	( % )				

Source: Derived from Table 3.

Table 7 Fluctuations in Migration to and from Three Large Metropolitan Areas, Net Migrants and Total Migrants

Year	In-migrants to 3 metropolitan areas	Out-migrants from 3 metro- politan areas	Net migrants	Total migrants
1954	788	403	385	1,191
1955	738	385	353	1,123
1956	743	342	401	1,085
1957	866	359	507	1,225
1958	815	393	421	1,208
1959	880	389	490	1,269
1960	999	406	594	1,405
1961	1,104	449	655	1,553
1962	1,184	536	647	1,720
1963	1,209	589	619	1,798
1964	1,217	639	578	1,856
1965	1,186	705	481	1,891
1966	1,138	732	406	1,870
1967	1,154	750	404	1,904
1968	1,202	784	4 18	1,985
1969	1,252	827	426	2,079
1970	1,263	870	393	2,133
1971	1,214	926	289	2,140
1972	1,127	921	207	2,048
1973	1,099	985	114	2,084
1974	987	949	39	1,936
1975	912	901	11	1,813
1976	850	873	Δ 23	1,723
1977	858	867	Δ 9	1,725
1978	837	829	7	1,666
1979	812	827	Δ 15	1,639
1980	789	795	Δ 6	1,584
1981	799	768	31	1,567
1982	806	751	55	1,557
1983	794	711	83.	1,505
1984	782	692	90	1,474

(Unit: 1,000 persons)

Source: "Annual Report on Migration Derived from the Basic Resident Registers," Statistics Bureau of the Office of the Prime Minister.

Remarks: The 3 metropolitan areas are Tokyo Metropolitan (Tokyo-to, Saitama, Chiba and Kanagawa prefectures), Chukyo Metropolitan (Aichi, Gifu and Mie prefectures) and Hanshin Metropolitan (Kyoto, Osaka and Hyogo prefectures).

 $\Delta$  marks indicate excess of out-migrants over in-migrants.



Fluctuations on Percentages of Urban Population in Figure 1 Japan (Percentages of urban population and percentages

Notes

- (\*1) Philip M. Hauser et al, Population and the Urban Future, State University of New York, Albany, 1982, p.1
- (\*2) United Nations, World Population Trends, Population and Development Interrelations and Population Policies, 1983, Monitoring Report, Volume 1, Population Trends, 1985, p.182. However, data for 1920 were derived from Table 1-1, p.3 of Hauser's paper mentioned in (1).
- (\*3) Refer to Note 2, p.205 of (2).
- (\*4) Louis Wirth, "Urbanism as a Way of Life," American Journal of Sociology 44 (July 1938); 1-24
- (\*5) Mexico City Declaration on Population and Development (Report of the International Conference on Population, 1984, Mexico City, 6-14 August 1984, Paragraph 17)
- (\*6) Otomo, Atsushi, "Theory on the Distribution of the Japanese Urban Population," Taimeido, 1979 (in Japanese). Derived from 1980 National Census, Monograph Series No. 3, "Regional Distribution of the Japanese Population and Its Changes", Statistics Bureau, Office of the Prime Minister, 1983, p.60, Table 3-5 (in Japanese).
- (\*7) United Nations, World Population Trends, Population and Development Correlations and Population Policies-1983 Monitoring Report, Volume 1, Population Trends, New York, 1985, p.182.

. .

# CHAPTER 2

# DEMOGRAPHIC URBANIZATION AND ECONOMIC DEVELOPMENT

Yoichi Okazaki

Director General Institute of Demographic Problems Ministry of Health and Welfare

.

1. Correlations of Urbanization and Economic Development

As can be understood by the fact that cities existed even before modern society, urbanization is not a phenomenon unique to the modern era. However, modern economic development, centering on various forms of industrial development, in itself is accompanied by factors which promote the urbanization of the population and labor force. In this respect, urbanization is inseparable from economic development in modern society.

In the case of Japan, industrialization was promoted after the Meiji period, which is the era the modernization process began. At the same time, urbanization was also advancing. However, up until World War II, the economic society of Japan was characterized by the creation of the so-called "dual structure." In other words, modern industries were established along side the existing, traditional sector represented by agriculture and small and medium enterprises. The speed of urbanization in this unbalanced development was also slow. According to the results of the nationwide census conducted in 1920, or approximately 50 years subsequent to the start of modernization, the urban population accounted for a mere 18% of the entire population, falling below the 20% level (see Table 1).

Later, the progress of industrialization had been accelerated, further pushing forward the process of urbanization. The ratio of the urban population to the total reached 32.7% in 1935, and continued to expand to the level of 37.7% by 1940. It was at this stage when prewar urbanization had reached its peak, but as а result o£ the intensification of the war and the resultant postwar devastation, the population was temporarily dispersed throughout the rural areas. Accordingly, the urban population ratio underwent a temporary drop to 27.8% at the conclusion of the war in 1945.

The country's economy was fortunately able to smoothly reconstruct itself in the immediate postwar period as a result of various factors, and eventually began to exhibit remarkable growth. It was around 1955 that the economy had regained its prewar standards. When analyzing the real GNP growth rate using this year as a basis, it had increased by approximately 4-fold during the 10-year period up to 1965 and 8.7-fold during the 20-year period up to 1975.

Such economic expansion has had a significant impact on the general industrial structure, with substantial variations during the period prior to 1955 and that following (see Table 1). With the sole exception the fact that the percentage of workers engaged in the primary of industry increased in 1947 to a level higher than that in the prewar due to the effects of war, period this industrial sector had continuously accounted for the largest share of workers in Japan's economy before the war. However, the industrial structure has undergone

remarkable change since 1955, including the sharp decline in the ratio of those employed in the primary sector. Instead, those in the secondary and tertiary sectors increased.

This dramatic economic growth and changes in the industrial structure during the postwar period obviously caused the population to experience a radical urbanization process. Reviewing the fluctuations in the urban population again, its ratio increased from 56.1% in 1955 to 67.9% in 1965, 75.9% in 1975 and further to 76.2% in 1980.

The urban population ratio has thus far been used as an index to summarize the progress of urbanization of Japan's population. Another factor that must be investigated, however, is the numerous new municipalities created after the war by the systematic integration of cities, towns and villages, and the portion of the rural population itself to be a part of the new urban population. The dramatic finding increase in the size of the urban population between 1950 and 1955 and shown in Table 1 is attributable to this fact. Meanwhile. the geographical area of what had become classified as urban increased significantly from 20,031/sq.km in 1950 to 67,980/sq.km in 1955. However, very few new cities have been established since 1955; thus, this factor does not cause any problems in the analysis of migration since 1955.

To investigate the effects of high economic growth and changes in the industrial structure on the urbanization of the Japanese population since 1955, an analysis is conducted on the population increases of the nation's prefectures to confirm the earlier observations.

Prior to 1955, population growth rates did not vary significantly by prefecture. However, when analyzing population changes during the 1955-1960 period, declines in 26 of the 47 prefectures are evident. Declines are also seen in 25 prefectures from 1960 to 1965, and during the next 5 years among 20 prefectures. What is observed is a drop in population for almost half of all prefectures.

It should be obvious that populaion increases in a district are the result of normal population growth (birth and mortality rate differences) well as demographic expansion (in-migration as and out-migration rate variations). When analyzing population growth by prefecture, natural increases do not exhibit conspicuous differences, and, of course, there are no cases of a prefecture registering a decrease in normal growth. Resultantly, the cause lies in the differences in demographic expansion by prefectures.

The number of prefectures in which demographic drops, i.e., higher out-migration rate, were recorded between 1955 and 1960, reached as many as 40 prefectures; 36 prefectures in the 1960-1965 period; and 35 during the five years beginning from 1965. On the contrary, the number of prefectures in which demographic increases are observed is comparatively much smaller, including the Tokyo Metropolitan area (Tokyo, Kanagawa, Saitama and Chiba), the Hanshin Metropolitan area (Osaka, Kyoto and Hyogo) and the Chukyo Metropolitan area (Aichi, Gifu and Mie).

The fact that the cases of postwar migration were primarily those of in-migration to these 3 metropolitan areas is a major characteristic of the urbanization of Japan's population, undoubtedly having an extremely important effect. The 3 metropolitan areas had represented the major industrial zones of the nation even before the war, and resultantly postwar economic development has been promoted with these traditional large industrial areas as the foundation. This is attributable to the fact that these coastal industrial zones had special advantages regarding imports of raw materials and exports of finished goods for the postwar export-intensive economic growth.

In a 15-year period between 1955 and 1970, Japan's GNP grew 6.9-fold in real terms, but the Tokyo, Hanshin and the Chukyo Metropolitan areas increased by 9.6-fold, 7.5-fold and 8-fold, respectively, which are considerably higher in comparison to the national average. Furthermore, while the number of workers engaged in the secondary and tertiary industrial sectors increased by 19.01 million on a nationwide basis, observed are increases in the rates for the Tokyo, Hanshin and the Chukyo Metropolitan areas of 5.89 million, 3.20 million and 1.84 million, respectively, or amounting to 10.93 million overall and 58% of the national increase.

It is clear from these statistics that the high economic growth during the postwar period centered on these 3 metropolitan areas, generating an abundance of employment opportunities. Migration to the metropolitan areas was mainly that of workers in search of work opportunities, but it cannot be denied that other reasons are education, marriage and workers' family members accompanying the moves. In post-secondary educational institutions (universities and particular, junior colleges) are concentrated in these 3 metropolitan areas, and there were many students migrating to these cities enrolled in such institutions. Accompanied by an increasing trend toward higher academic achievement during the postwar period, it is quite natural that Japan's urban centers became the point around which populations became concentrated.

It is clear due to the above-mentioned mechanism that economic development is the cause of the urbanization of populations, but, at the urbanization is also a factor that promotes economic same time, development. This is because active economic activities and high population density characterize urban areas. As shown in Table 2, when analyzing population density in inhabitable areas of the Tokyo Metropolitan area that while the national average is 0.99 (1,000 persons/sq.km), the rate is 8.56 for the City of Tokyo, 4.77 for Kanagawa Prefecture, 2.16 for Saitama Prefecture, 1.38 for Chiba prefecture and 3.28 for the overall metropolitan area. High population density in a limited area suggests over-population on one hand, but, on the other, concentrated activities in terms of both production and consumption can be expected, leading to high-level economic efficiency. This becomes more conspicuous when analyzing the ratio of net prefectural production to inhabitable area. While the national average is 1.73 (¥billion/sq.km), the ratio is 27.91 for the City of Tokyo, 7.96 for Kanagawa Prefecture, 2.65 for Saitama Prefecture, 1.73 for Chiba Prefecture and 7.09 for the entire the Tokyo Metropolitan area. The same can more than likely be said about Japan's other metropolitan areas.

### 2. New Stage of Urbanization

The basic trend of the promotion of urbanization together with economic development is a continuous one. However, the content changes in accordance with the stages of economic development. These changes are analyzed here from three perspectives.

(1) Promotes Stabilization of the Migration Rate

When analyzing the migration rate shown in "Report on Migration Based on the Basic Resident Registers" (refer to Table 3), both migration rates inside and outside prefectures underwent gradual increases from around 1955, - reached its peak around 1970, and began to undergo slow decline since.

Among such fluctuations of the migration rate, the increase observed between 1955 and 1970 coincides with the period of high economic growth, and can be viewed as intensification of migration due to high economic growth as mentioned previously. Similarly, the following decline in the migration rate can be partially explained as a decline resulting from the deceleration of the economic growth rate.

In other words, although the average annual economic growth rate in the 15-year period between 1955 and 1970 was as high as 14%, that between 1970 and 1983 declined to 5%. Such a shift to low economic growth evidently caused migration to slow down due to the narrowing of employment opportunities in urban areas.

However, in addition to this cause, there was another factor that reduced migration in general during the same period; changes in the age composition of the population. As is discussed later in more detail (refer to Table 6), there are considerable differences in migration rates according to age group. When analyzing the annual migration rate within prefectures according to the population census conducted in 1980, the age group between 20 and 24 year-olds recorded the highest rate of 6.7%, followed by 5.5% of 15 to 19 year-olds and 5.1% of 25 to 29 year-olds. Except for these 3 age groups, the migration rate declines as the age increases, and the migration rate of 1 to 4 year olds, who are assumed to have migrated with families, is also low, registering approximately 3.0%.

As a consequence, during a period in which youngsters between the age of 15 to 29 account for a large percentage of the population, the migration rate generally increases, and when the percentage of children the migration rate probably declines. When studying the decreases, actual fluctuations in the nationwide population of the 15 to 29 year-olds, the population was 24.85 million in 1955, increased to 29.04 million in 1970 and then declined to 25.15 million in 1980. Such fluctuations in the population of youngsters is attributable to a rapid increase in the birth rate due to the baby boom between 1947 and 1949 and minor differences before and after the boom. In oter words, the period of an increased migration rate around 1970 coincided with the period in which youngsters with high migration rate rapidly increased. The increase in the migration rate was caused because this increase in the population of children corresponded with the increase in the populaion absorption capacity of the urban areas. Thereafter, the population of youngsters having a tendency to migrate declined, resulting in a lower migaration rate.

### (2) Declines in Migration to Metropolitan Areas

One significant change in the urbanization which has become obvious from the mid 1970's is the fact that migrations to the three metropolitan areas, which was at one time the main indicator of Japan's urbanization, has declined. Higher annual in-migration to the three metropolitan areas of Tokyo, Hanshin and Chiba recorded 0.35 million in 1955 ( Table 4), but gradually increased to reach its peak in 1961 with a figure of 0.66 million. In contrast, it slowly decreased thereafter to 0.39 million in 1970, slightly over 10,000 in 1975 and finally slightly below the level of minus 20,000 in 1976. Since then, figure for higher or excessive in-migration is extremely small, although there is some fluctuation, exhibiting a completely different trend from the massive in-migration during the period of high economic growth. In short. it can be said that the period of urbanization centering on the metropolitan areas was concluded by the middle of the 1970s, with a new period of urbanization beginning thereafter.

is an enormous task to clarify economic development It and structure, which lie in the background of this new period of urbanization, but fluctuations in in-migrants and out-migrants to and from the metropolitan areas are studied beforehand. According to Table the number of in-migrants to the metropolitan areas reached peaks 4, 1964 and 1970, and since 1970 has been exhibiting an almost twice in consistent declining trend. On the other hand, the number of out-migrants from the metropolitan areas had increased up to 1973, but shifted to decline thereafter. This trend has recently intensified, and as a result, the major cause of the decline in excessive in-migration to

the metropolitan areas does not lie in increases in the number of out-migrants. The decrease is attributable to declines in the number of in-migrants.

When analyzing the trend of migration of the metropolitan areas by Hanshin and Chukyo, the respective areas of Tokyo, the Hanshin Metropolitan area has shown a conspicous trend of higher out-migration from the beginning of the 1970s and still continues at the present. On the Tokyo Metropolitan area the contrary, is presently still experiencing higher in-migration, although the number of in-migrants has and the Chukyo Metropolitan area lies somewhere between the declined, two, exhibiting slightly higher in-migration and out-migration.

(3) Diffusion Phenomenon of Urbanization

Migration to the 3 metropolitan areas, which had been developing from many years in the past, has calmed down. Nevertheless, the trend of urbanization in Japan has not stopped as a whole. Urbanization has currently diffused to provinces, and is progressing, although this is not a noticeable as in the past, being moderate. In this relationship, urbanization can be considered to have entered a new period.

When analyzing the populaon percentages living in densely inhabited districts (D.I.D.s) as an index reflecting the trends of regional urbanization (Table 5), the naionwide percentage slowly rose from 43.7% in 1960 to 53.5% in 1970 and to 59.7% in 1980. As for Aomori the rate was 28.1% in 1960, but gradually increased to Prefecture. record 35.2% in 1970 and 41.9% in 1980. Similarly, in Kagoshima Prefecture, which is in striking contrast to Aomori Prefecture in terms of geography, the rate increased from 19.5% to 27.7% and then to 34.7% in the same period. Both prefectures were once traditional agrarian areas, but have currently reached a considerable degree of urbanization. When conducting more detailed analyses, there are of course areas in which urbanization is still progressing at a slower pace. However, even in these areas, urbanization is gradually being promoted.

Such a diffusion phenomenon of urbanization is desirable also from the viewpoint of land utilization, and new developments in this direction are expected in the future.

The previously-mentioned slowdown of economic growth and industrial structural changes shown in Table 5 are the background characteristics of the start of the new period of urbanization from the mid-1970s. Furthermore, the fact that a series of national land development projects implemented by the government after the war had taken effect is believed to have contributed to this new development. "Outline on Reconstruction of National Land" was drawn up as early as 1964; a year after the end of the war "National Land Development Law" was enacted in 1950; and "Nationwide Comprehensive Development Plan" was formulated in 1962. The objective of the 1962 plan was to prevent excessive urban growth, and had the characteristic feature of the "regional development concept" as its method. Its major policy was the construction of the so-called new industrial cities. "New Nationwide Comprehensive Development Plan" established in 1964 again held the control of overpopulation and underpopulation as its objective, and in so doing included a large-scale project concept.

The above plans were all established in the period of Japan's high economic growth, but it is very interesting to know that the concepts such as the prevention of the overgrowth of cities and dissolution of over and under-population had already been incorporated in these plans at that time.

These regional development concepts gradually took effect, and, in addition, the industrial structure underwent a transition from heavy chemical industry to high technology industry and then to the period of an expanding service industry. These changes resulted in the diffusion of economic activities to the rural areas and reduction of regional differences in terms of living standards. Resultantly, urbanization progressed in the rural regions and migration declined throughout the nation.

As mentioned above, these factors induced the arrival of the new At that time in 1977, the "Third Nationwide period of urbanization. Comprehensive Development Plan" was established with the aim of securing stabilization of the population in line with the new migration trend, the so-called "stabilization concept" was formulated. The third and nationwide comprehensive development plan is currently being revised, and preparations are being made to establish the fourth development plan. The growth rate of the national population is anticipated to slow down and then turn to show a declining trend, and, furthermore. the society is forecasted to experience a rapid aging trend. The fourth plan incorporates these factors as preconditions, and its focus is placed on the anticipation and devising of measures for numerous problems, including those concerning the regional distribution of the population, urbanization and over and under-population.

### 3. Future Prospects and Tasks

#### (1) Prospects of Urbanization

Urbanization is anticipated to continue, but the type of urbanization, whereby the population migrates to the urban areas, will decline in a number comparable to the past. This is attributable to the fact that the society is presently composed of eldest sons and daughters in general and the number of second and third children, who can easily migrate, has decreased. In addition, reductions in regional differences in economic standards has also contributed to the decline. In fact, the migration rate by age has recently been declining (Table 6).

Thus, the progress of urbanization by way of migration will slow down, but, on the other hand, urbanization by means other than migration is anticipated to advance. One reason for this progress is the fact that the age composition of the population living in areas other than the urban areas is becoming higher, and, as a result, natural increase has slowed inducing declines in the number of population. The number of cities, towns and villages which recorded declines in population between 1975 and 1980 amounted to 1,512 out of 2,609 municipalities in rural areas, and the population of these municipalities accounted for 8.78 million out of 27.87 million. Thus, a large percentage of the rural population will naturally decline, while urban population will naturally increase, and urbanization would naturally progress as a result.

Another cause for urbanization without migration is the advancement of urbanization of the senses. Although not living in urban areas, people's senses will gradually become urbanized due to the effects of mass media, and the fact that their living standards and life styles will also be urbanized is inevitable. Thus, urbanization not accompanying migration is anticipated to progress in the future.

### (2) Future Tasks

Advancement of urbanization calls for various tasks. One of these tasks is that special consolidation of the living environment will Since cities are unnatural become necessary. environment made consolidation of various facilities will be required to artificially, enable people to lead comfortable and safe lives in cities. As cities were established mainly as accompaniments of high economic growth in the gap between economic development and social development has Japan, been large. Although efforts have already been exerted to resolve this problem, further efforts are required in the future.

Another task resulting from the advancement of urbanization is the devising of important measures for the aged of the society, who are anticipated to rapidly increase in the future. Cities have been traditionally established as places where young people reside, but it is clear that the urban population will increase in terms of age requiring that efforts be made to build cities where the aged can live comfortably. This problem has not sufficiently been resolved as well in western countires, which are advanced countries in terms of urbanization and the aging of society, and an attitude for finding a unique solution in Japan is required.

Year	Urban area(%)	Rural area(%)	Primary industry(%)	Secondary industry(%)	Tertiary industry(%)
1920	18.0	82.0	53.8	20.5	23.7
1925	21.6	78.4			
1930	24.0	76.0	49.7	20.3	29.8
1935	32.7	67.3			
1940	37.7	62.3	44.3	26.0	29.0
1945	27.8	72.2			<u> </u>
1947	33.1	66.9	53.4	22.2	23.0
1950	37.3	62.7	48.3	21.9	29.7
1955	56.1	43.9	41.0	23.5	35.5
1960	63.3	36.7	32.6	29.2	38.2
1965	67.9	32.1	24.7	31.5	43.7
1970	72.1	27.9	19.3	34.0	46.6
1975	75.9	24.1	13.8	34.1	51.8
1980	76.2	23.8	10.9	33.6	55.4

Table 1 Urban and Rural Population Ratios and Worker Distribution by Industry

Source: "Population Census"

	1	2	3	4	5
Area	Inhabitable area (km <sup>2</sup> )	Population (1980) (1,000 persons)	Net prefectural production (1980) (¥ billion)	Density I (2/1)	Density II (3/1)
Saitama Prefecture	2,513	5,420	6,654	2.16	2.65
Chiba Prefecture	3,427	4,735	5,919	1.38	1.73
Tokyo	1,357	11,618	37,878	8.56	27.91
Kanagawa Prefecture	1,453	6,924	11,566	4.77	7.96
Sub-total	8,750	28,697	62,017	3.28	7.09
Nationwide	11,8459	117,060	205,331	0.99	1.73

### Table 2 Population Density and Concentration of Economic Activities

Source: "Statistic Index of Social Life" of March 1983, Bureau of the Statistics, Office of the Prime Minister

- 46 --

<u>,                                     </u>	Total migration	Migration	Migration
Year	rate (%)	rate within	between
		prefectures(%)	prefectures(%)
1955	5.80	3.29	2.51
1956	5.43	3.06	2.37
1957	5.84	3.20	2.64
1958	5.81	3,20	2.61
1959	5.82	3.17	2.65
1960	6.09	3.20	2.89
1961	6.42	3.27	3.15
1962	6.95	3.46	3.49
1963	7.25	3.62	3.63
1964	7.51	3.75	3.76
1965	7.56	3.78	3.78
1966	7.55	3.81	3.74
1967	7.51	3.73	3.78
1968	7.72	3.81	3.91
1969	7.97	3.93	4.04
1970	8.03	3.92	4.11
1971	7.99	3.92	4.07
1972	7.88	3.96	3.92
1973	7.87	3.97	3.90
1974	7.30	3.72	3.58
1975	6.78	3.46	3.32
1976	6.57	3.40	3.17
1977	6.51	3.37	3.14
1978	6.36	3.32	3.04
1979	6.31	3.31	3.00
1980	6.07	3.19	2.88
1981	5.89	3.06	2.83
1982	5.81	3.02	2.79
1983	5.62	2.93	2.69
1984	5.48	2.86	2.62

# Table 3 Fluctuations in Migration Rate

Source: "Report on Migration based on the Basic Resident Registers"

## Table 4 In-migrations and Out-migrations

Year	No. of in-migrants (1,000 persons)	No. of out-migrants (1,000 persons)	Figure of higher in-migrants (1,000 persons)
1955	738	385	353
1956	743	342	401
1957	866	359	507
1958	815	393	421
1959	880	389	490
1960	999	406	594
1961	1,104	449	655
1962	1,184	536	647
1963	1,209	589	619
1964	1,217	639	578
1965	1,186	705	481
1966	1,138	732	406
1967	1,154	750	404
1968	1,202	784	418
1969	1,252	827	426
1970	1,263	870	393
1971	1,214	926	289
1972	1,127	921	207
1973	1,099	985	114
1974	987	949	39
1975	912	901	11
1976	850	873	-23
1977	858	867	- 9
1978	837	829	7
1979	812	827	-15
1980	789	795	- 6
1981	799	768	31
1982	806	751	55
1983	794	711	83
1984	782	692	90

## to and from 3 Metropolitan Areas

Source: "Annual Report on Migration Derived from the Basic Resident Registers"

# Table 5 Population Percentage in Densely Inhabited Districts and Percentage of Those Employed in Secondary and Tertiary Industries

Area   1960   1970   1980   1960   1970   1980     Nationwide   43.7   53.5   59.7   67.3   80.7   90.1     1.   Hokkaido   42.1   57.3   65.7   64.2   79.0   86.4     2.   Aomori   28.1   35.2   41.9   42.6   60.2   74.5     3.   Iwate   20.8   23.9   27.8   43.6   67.4   73.4     4.   Miyagi   31.8   41.2   48.7   54.4   69.8   83.9     5.   Akita   20.5   24.6   29.1   45.2   58.2   76.3     6.4   31.9   46.4   64.0   77.8   70.0   78.7     9.   Tochigi   24.6   28.1   34.3   54.4   71.5   83.9     11.   Saitama   36.9   55.0   69.8   64.4   85.3   93.4     12.   Chiba   28.7   36.6   20.0   51.4 <td< th=""><th></th><th>Popul</th><th>ation in DI</th><th>Ds (%)</th><th>Rate o secon</th><th>f those emp dary and te ndustries (</th><th>loyed in rtiary %)</th></td<>		Popul	ation in DI	Ds (%)	Rate o secon	f those emp dary and te ndustries (	loyed in rtiary %)
Nationwide   43.7   53.5   59.7   67.3   80.7   90.1     1.   Hokkaido   42.1   57.3   65.7   64.2   79.0   86.4     2.   Aomori   28.1   35.2   41.9   42.6   60.2   74.5     3.   Iwate   20.8   23.9   27.8   43.6   57.4   73.4     4.   Miyagi   31.8   41.2   48.7   54.4   69.8   83.9     5.   Akita   20.5   24.6   29.1   45.2   58.2   76.3     6.   Yamagata   23.0   32.1   37.3   47.9   62.3   77.6     9.   Tochigi   24.6   28.1   34.3   54.4   71.5   83.9     10.   Gunma   27.4   30.8   37.4   57.2   78.8   39.2     11.   Saitama   36.9   55.0   69.8   64.4   85.3   93.2     12.   Chigata   28.7   50.7	Area	1960	1970	1980	1960	1970	1980
1.   Hokkaido   42.1   57.3   65.7   64.2   79.0   86.4     2.   Aomori   28.1   35.2   41.9   42.6   60.2   74.5     3.   Iwate   20.8   23.9   27.8   43.6   57.4   73.4     4.   Miyagi   31.8   41.2   48.7   54.4   69.8   83.9     5.   Akita   20.5   24.6   29.1   45.2   56.2   76.3     6.   Yamagata   23.0   32.1   37.3   47.9   62.3   77.0     7.   Fukushima   22.3   26.4   31.9   48.4   64.0   77.8     8.   Tochigi   24.6   28.1   34.3   54.4   71.5   83.5     10.   Guma   27.4   30.8   37.4   57.2   72.8   83.9     11.   Saitama   36.9   56.4   28.7   96.0   97.9     13.   Gita   28.7   36.6   6	Nationwide	43.7	53.5	59.7	67.3	80.7	90.1
2. Aomori 28.1 35.2 41.9 42.6 60.2 74.5   3. Iwate 20.8 23.9 27.8 43.6 57.4 73.4   4. Miyagi 31.8 41.2 48.7 54.4 69.8 81.9   5. Akita 20.5 24.6 29.1 45.2 58.2 76.3   6. Yamagata 23.0 32.1 37.3 47.9 62.3 77.6   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 93.3   14. Kanagawa 70.0 78.4 88.2 63.0 78.5 87.5   16. Toyama 31.7 34.2 38.7 56.6 63.0 78.0 89.0   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama	1. Hokkaido	42.1	57.3	65.7	64.2	79.0	86.4
3. Iwate 20.8 23.9 27.8 43.6 57.4 73.4   4. Miyagi 31.8 41.2 48.7 54.4 69.8 83.9   5. Akita 20.5 24.6 29.1 45.2 58.2 76.3   7. Fukushima 22.3 26.4 31.9 48.4 64.0 77.8   7. Forhigi 24.6 28.1 34.3 54.4 71.5 83.5   0. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   10. Gunma 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Nijgata 28.7 36.6 63.0 78.0 80.0   15. Nigata 31.7 <td< td=""><td>2. Aomori</td><td>28.1</td><td>35.2</td><td>41.9</td><td>42.6</td><td>60.2</td><td>74.5</td></td<>	2. Aomori	28.1	35.2	41.9	42.6	60.2	74.5
4. Miyagi 31.8 41.2 48.7 54.4 69.8 83.9   5. Akita 20.5 24.6 29.1 45.2 58.2 76.3   7. Fukushima 22.3 26.4 31.9 48.4 64.0 77.8   8. Ibaraki. 19.2 21.9 26.4 31.9 48.4 64.0 77.8   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.9   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.7 56.6 75.5 87.9   17. Ishikawa 31.7 34.2 38.7 59.8 75.5 87.9   12.	<ol><li>Iwate</li></ol>	20.8	23.9	27.8	43.6	57.4	73.4
5. Akita 20.5 24.6 29.1 45.2 58.2 76.3   6. Yamagata 23.0 32.1 37.3 47.9 62.3 77.0   7. Fukushima 19.2 21.9 26.2 43.9 63.0 78.7   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   22. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.6 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 76.0 87.5   19. Yamanashi </td <td>4. Miyagi</td> <td>31.8</td> <td>41.2</td> <td>48.7</td> <td>54.4</td> <td>69.8</td> <td>83.9</td>	4. Miyagi	31.8	41.2	48.7	54.4	69.8	83.9
6. Yamagata 23.0 32.1 37.3 47.9 62.3 77.0   7. Fukushima 22.3 26.4 31.9 48.4 64.0 77.8   8. Ibaraki. 19.2 21.9 26.2 43.9 63.0 78.7   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13.7 Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Nigata 28.7 36.6 42.0 51.4 67.3 87.9   16. Toyama 33.5 34.9 45.6 63.0 78.0 89.0   18. Pukui	5. Akita	20.5	24.6	29.1	45.2	58.2	76.3
7. Fukushima 22.3 26.4 31.9 48.4 64.0 77.8   8. Ibaraki 19.2 21.9 26.2 43.9 63.0 78.7   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 97.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 63.0 78.0 89.0   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.9   17. Ishikawa 33.5 34.9 36.7 66.7 80.5 91.2   18. Fukui 31.6 <td>6. Yamagata</td> <td>23.0</td> <td>32.1</td> <td>37.3</td> <td>47.9</td> <td>62.3</td> <td>77.0</td>	6. Yamagata	23.0	32.1	37.3	47.9	62.3	77.0
8. Ibaraki 19.2 21.9 26.2 43.9 63.0 78.7   9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 55.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.6 75.5 87.9   18. Fukui 31.6 51.4 28.5 76.6 70.4 81.7   20.	<ol><li>Fukushima</li></ol>	22.3	26.4	31.9	48.4	64.0	77.8
9. Tochigi 24.6 28.1 34.3 54.4 71.5 83.5   10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kangawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 76.0 87.5   17. Ishikawa 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   23. Aichi	8. Ibaraki	19.2	21.9	26.2	43.9	63.0	78.7
10. Gunma 27.4 30.8 37.4 57.2 72.8 83.9   11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 <td>9. Tochigi</td> <td>24.6</td> <td>28.1</td> <td>34.3</td> <td>54.4</td> <td>71.5</td> <td>83.5</td>	9. Tochigi	24.6	28.1	34.3	54.4	71.5	83.5
11. Saitama 36.9 55.0 69.8 64.4 85.3 93.4   12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 97.9   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi	10. Gunma	27.4	30.8	37.4	57.2	72.8	83.9
12. Chiba 28.7 50.7 62.3 52.6 77.6 89.2   13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kangawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi	ll. Saitama	36.9	55.0	69.8	64.4	85.3	93.4
13. Tokyo 92.0 95.3 97.2 97.9 99.0 99.3   14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   27. Osaka 81.4	12. Chiba	28.7	50.7	62.3	52.6	77.6	89.2
14. Kanagawa 70.0 78.4 88.2 89.7 96.0 97.9   15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 60.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga	13. Tokyo	92.0	95.3	97.2	97.9	99.0	99.3
15. Niigata 28.7 36.6 42.0 51.4 67.3 82.1   16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21.6 28.8 30.7 51.7 68.2 80.3   21.6 28.8 30.7 51.7 68.2 80.3   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9	14. Kanagawa	70.0	78.4	88.2	89.7	96.0	97.9
16. Toyama 31.7 34.2 38.7 59.8 75.5 87.9   17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4	15. Niigata	28.7	36.6	42.0	51.4	67.3	82.1
17. Ishikawa 33.5 34.9 45.6 63.0 78.0 89.0   18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 811.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo <	16. Toyama	31.7	34.2	38.7	59.8	75.5	87.9
18. Fukui 31.6 36.1 36.9 58.5 76.0 87.5   19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22	17. Ishikawa	33.5	34.9	45.6	63.0	78.0	89.0
19. Yamanashi 21.4 28.9 31.4 56.6 70.4 81.7   20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22.7 36.9 49.4 70.3 81.0 91.8   30. Wakayama 33.9 40.4 42.0 64.9 77.8 83.9   31. Tottori 21.9	18. Fukui	31.6	36.1	36.9	58.5	76.0	87.5
20. Nagano 21.0 28.8 30.7 51.7 68.2 80.3   21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22.7 36.9 49.4 70.3 81.0 91.8   30. Wakayama 33.9 40.4 42.0 64.9 77.8 83.9   31. Tottori 21.9 23.7 26.0 52.2 68.2 79.6   33. Okayama 20.5	19. Yamanashi	i 21.4	28.9	31.4	56.6	70.4	81.7
21. Gifu 28.3 33.9 36.7 65.7 80.5 91.2   22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22.7 36.9 49.4 70.3 81.0 91.8   30. Wakayama 33.9 40.4 42.0 64.9 77.8 83.9   31. Tottori 21.9 23.7 26.0 52.2 68.2 79.6   32. Shimane 15.3 21.4 23.7 46.4 61.3 77.6   33. Okayama 20.2	20. Nagano	21.0	28.8	30.7	51.7	68.2	80.3
22. Shizuoka 37.4 45.9 51.4 69.3 82.3 89.4   23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22.7 36.9 49.4 70.3 81.0 91.8   30. Wakayama 33.9 40.4 42.0 64.9 77.8 83.9   31. Totri 21.9 23.7 26.0 52.2 68.2 79.6   32. Shimane 15.3 21.4 23.7 57.1 74.4 86.8   33. Okayama <td< td=""><td>21. Gifu</td><td>28.3</td><td>33.9</td><td>36.7</td><td>65.7</td><td>80.5</td><td>91.2</td></td<>	21. Gifu	28.3	33.9	36.7	65.7	80.5	91.2
23. Aichi 53.8 57.1 66.6 81.3 90.0 94.5   24. Mie 27.6 30.9 37.8 57.9 74.2 87.4   25. Shiga 19.7 21.5 28.5 55.9 72.4 88.3   26. Kyoto 65.5 72.6 78.9 81.8 90.4 94.5   27. Osaka 81.4 90.1 93.9 95.6 97.9 98.9   28. Hyogo 57.2 67.3 71.6 79.7 89.2 94.7   29. Nara 22.7 36.9 49.4 70.3 81.0 91.8   30. Wakayama 33.9 40.4 42.0 64.9 77.8 83.9   31. Tottori 21.9 23.7 26.0 52.2 68.2 79.6   32. Shimane 15.3 21.4 23.7 46.4 61.3 77.6   33. Okayama 20.5 29.0 33.7 57.1 74.4 86.8   34. Hiroshima 41.8 51.9 56.6 67.4 82.7 90.7   35. Yamaguchi 33.0 <td>22. Shizuoka</td> <td>37.4</td> <td>45.9</td> <td>51.4</td> <td>69.3</td> <td>82.3</td> <td>89.4</td>	22. Shizuoka	37.4	45.9	51.4	69.3	82.3	89.4
24.Mie27.630.937.857.974.287.425.Shiga19.721.528.555.972.488.326.Kyoto65.572.678.981.890.494.527.Osaka81.490.193.995.697.998.928.Hyogo57.267.371.679.789.294.729.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.7 <t< td=""><td>23. Aichi</td><td>53.8</td><td>57.1</td><td>66.6</td><td>81.3</td><td>90.0</td><td>94.5</td></t<>	23. Aichi	53.8	57.1	66.6	81.3	90.0	94.5
25.Shiga19.721.528.555.972.488.326.Kyoto65.572.678.981.890.494.527.Osaka81.490.193.995.697.998.928.Hyogo57.267.371.679.789.294.729.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.3 </td <td>24. Mie</td> <td>27.6</td> <td>30.9</td> <td>37.8</td> <td>57.9</td> <td>74.2</td> <td>87.4</td>	24. Mie	27.6	30.9	37.8	57.9	74.2	87.4
26.Kyoto65.572.678.981.890.494.527.Osaka81.490.193.995.697.998.928.Hyogo57.267.371.679.789.294.729.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.	25. Shiga	19.7	21.5	28.5	55.9	72.4	88.3
27.Osaka81.490.193.995.697.998.928.Hyogo57.267.371.679.789.294.729.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.276.244.01a24.430.637.951.565.1<	26. Kyoto	65.5	72.6	78.9	81.8	90.4	94.5
28.Hyogo57.267.371.679.789.294.729.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.877.266.778.641.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.276.244.Oita24.430.637.951.565.180.145.Miyazaki22.926.436.846.46	27. Osaka	81.4	90.1	93.9	95.6	97.9	98.9
29.Nara22.736.949.470.381.091.830.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.276.244.Oita24.430.637.951.565.180.145.Miyazaki22.926.436.846.462.176.346.Kagoshima19.527.734.739.9<	28. Hyogo	57.2	67.3	71.6	79.7	89.2	94.7
30.Wakayama33.940.442.064.977.883.931.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.276.244.Oita24.430.637.951.565.180.145.Miyazaki22.926.436.846.462.176.346.Kagoshima19.527.734.739.957.775.347.Okinawa48.955.3 <t< td=""><td>29. Nara</td><td>22.7</td><td>36.9</td><td>49.4</td><td>70.3</td><td>81.0</td><td>91.8</td></t<>	29. Nara	22.7	36.9	49.4	70.3	81.0	91.8
31.Tottori21.923.726.052.268.279.632.Shimane15.321.423.746.461.377.633.Okayama20.529.033.757.174.486.834.Hiroshima41.851.956.667.482.790.735.Yamaguchi33.040.344.064.276.886.236.Tokushima20.223.626.853.568.680.637.Kagawa24.831.732.657.574.785.938.Ehime29.735.241.256.371.081.639.Kochi23.032.438.249.066.278.640.Fukuoka51.556.462.878.185.792.241.Saga20.823.426.657.266.778.642.Nagasaki31.437.041.459.071.380.043.Kumamoto24.330.434.848.963.276.244.Oita24.430.637.951.565.180.145.Miyazaki22.926.436.846.462.176.346.Kagoshima19.527.734.739.957.775.347.Okinawa48.955.378.587.4	30. Wakayama	33.9	40.4	42.0	64.9	77.8	83.9
32. Shimane 15.3 21.4 23.7 46.4 61.3 77.6   33. Okayama 20.5 29.0 33.7 57.1 74.4 86.8   34. Hiroshima 41.8 51.9 56.6 67.4 82.7 90.7   35. Yamaguchi 33.0 40.3 44.0 64.2 76.8 86.2   36. Tokushima 20.2 23.6 26.8 53.5 68.6 80.6   37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamo	31. Tottori	21.9	23.7	26.0	52.2	68.2	79.6
33. Okayama 20.5 29.0 33.7 57.1 74.4 86.8   34. Hiroshima 41.8 51.9 56.6 67.4 82.7 90.7   35. Yamaguchi 33.0 40.3 44.0 64.2 76.8 86.2   36. Tokushima 20.2 23.6 26.8 53.5 68.6 80.6   37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki <t< td=""><td>32. Shimane</td><td>15.3</td><td>21.4</td><td>23.7</td><td>46.4</td><td>61.3</td><td>77.6</td></t<>	32. Shimane	15.3	21.4	23.7	46.4	61.3	77.6
34. Hiroshima 41.8 51.9 56.6 67.4 82.7 90.7   35. Yamaguchi 33.0 40.3 44.0 64.2 76.8 86.2   36. Tokushima 20.2 23.6 26.8 53.5 68.6 80.6   37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima	33. Okayama	20.5	29.0	33.7	57.1	74.4	86.8
35. Yamaguchi 33.0 40.3 44.0 64.2 76.8 86.2   36. Tokushima 20.2 23.6 26.8 53.5 68.6 80.6   37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa <t< td=""><td>34. Hiroshima</td><td>41.8</td><td>51.9</td><td>56.6</td><td>67.4</td><td>82.7</td><td>90.7</td></t<>	34. Hiroshima	41.8	51.9	56.6	67.4	82.7	90.7
36. Tokushima 20.2 23.6 26.8 53.5 68.6 80.6   37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa </td <td>35. Yamaguchi</td> <td>i 33.0</td> <td>40.3</td> <td>44.0</td> <td>64.2</td> <td>76.8</td> <td>86.2</td>	35. Yamaguchi	i 33.0	40.3	44.0	64.2	76.8	86.2
37. Kagawa 24.8 31.7 32.6 57.5 74.7 85.9   38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	36. Tokushima	a 20.2	23.6	26.8	53.5	68.6	80.6
38. Ehime 29.7 35.2 41.2 56.3 71.0 81.6   39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	37. Kagawa	24.8	31.7	32.6	57.5	74.7	85.9
39. Kochi 23.0 32.4 38.2 49.0 66.2 78.6   40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	38. Ehime	29.7	35.2	41.2	56.3	71.0	81.6
40. Fukuoka 51.5 56.4 62.8 78.1 85.7 92.2   41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	39. Kochi	23.0	32.4	38.2	49.0	66.2	78.6
41. Saga 20.8 23.4 26.6 57.2 66.7 78.6   42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	40. Fukuoka	51.5	56.4	62.8	78.1	85.7	92.2
42. Nagasaki 31.4 37.0 41.4 59.0 71.3 80.0   43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	41. Saga	20.8	23.4	26.6	57.2	66.7	78.6
43. Kumamoto 24.3 30.4 34.8 48.9 63.2 76.2   44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	42. Nagasaki	31.4	37.0	41.4	59.0	71.3	80.0
44. Oita 24.4 30.6 37.9 51.5 65.1 80.1   45. Miyazaki 22.9 26.4 36.8 46.4 62.1 76.3   46. Kagoshima 19.5 27.7 34.7 39.9 57.7 75.3   47. Okinawa  48.9 55.3  78.5 87.4	43. Kumamoto	24.3	30.4	34.8	48.9	63.2	76.2
45.   Miyazaki   22.9   26.4   36.8   46.4   62.1   76.3     46.   Kagoshima   19.5   27.7   34.7   39.9   57.7   75.3     47.   Okinawa    48.9   55.3    78.5   87.4	44. Oita	24.4	30.6	37.9	51.5	65.1	80.1
46. Kagoshima   19.5   27.7   34.7   39.9   57.7   75.3     47. Okinawa    48.9   55.3    78.5   87.4	45. Miyazaki	22.9	26,4	36.8	46.4	62.1	76.3
47. Okinawa 48.9 55.3 78.5 87.4	46. Kagoshima	a 19.5	27.7	34.7	39.9	57.7	75.3
	47. Okinawa		48.9	55.3		78.5	87.4

Source: "Population Census"

~

Age	1960	1970	1980
Total	2.8	4.7	2.6
0	***	2.4	1.9
1 - 4)		3.9	3.0
5 - 9	1.2	2.7	2.1
10 - 14 <sup>J</sup>		1.9	1.3
15 - 19	7.4	11.1	5.5
20 - 24	7.1	10.1	6.7
25 - 29	4.8	7.3	5.1
30 - 34 <sub>1</sub>	23	4.6	3.4
35 - 39	2.5	3.2	2.4
40 - 44	1 4	2.4	1.6
45 - 49	<b>T</b> • • •	2.0	1.2
50 - 54	1 0	1.7	1.1
55 - 59'	1.0	1.5	0,9
60 - 64	0.8	1.3	0.7
65 ~ 69 '		1.2	0.7
70 - 74	0.8	1.2	0.7
75 - 79'	V.V	1.3	0.7
80 - 84	0.6	1.3	0.7
85 and ' over		1.3	0.7

Source: "Population Census"

### Bibliography

- Kuroda, Toshio. \*Composition of Population Relationships of Age, 1. Sex and Spouse" (Monograph series of the population census of 1980) 2.
- Okazaki, Yoichi. "Migration" (same as above)
- 3. Otomo, Atsushi. "Regional Distribution of the Japanese Population and Its Changes" (same as above)
- Sagaza, Haruo. "Aged Population" (same as above) 4.
- Uchino, Sumiko & Mita, Fusami. "Table of Inter-prefectural 5. Migration" Institute of Populaion Problems, Ministry of Health and Welfare, 1984.12.

# CHAPTER 3

# CHANGES IN GEOGRAPHICAL DISTRIBUTION OF JAPANESE POPULATION

Atsushi Otomo Professor Utsunomiya University

.

·

### 1. Population Distribution by Region and Its Change

### (1) Changes in Share of Regional Population

In 1950 Japan registered 8412 thousands of inhabitants including those in Okinawa, the Japanese island still governed by U.S. military Japan had been rising up out of the confusion forces. At that time, caused by the World War II and its conclusion. When examining the nation's population distribution by region at that time in terms of proportion of total population, that is, share of regional population, it becomes evident that of the eleven regions, two regions -- that of Minami-kanto including the Keihin metropolitan area centered on Tokyo, the capital, and that of Kyushu and Okinawa -- accounted for the largest share of regional population; about 13 million each, or 15.5 percent of total population was situated in these two geographical regions. The next largest share of regional population was that of the Tohoku and including the Keihanshin metropolitan area centered on Nishi-kinki. Osaka; approximately 90 million each, or 10.7 percent of total population. resided in these two regions. The Keihin and Keihanshin metropolitan areas were followed by the Tokai region, including the Chukyo metropolitan area, 10.5 percent of the total population was distributed to this region. In addition to these regions, with the exception of the 3.1 percent of the total population accounted for by the Nishi-kinki region, all other regions investigated recorded regional population shares ranging from 5.0 percent to 10.0 percent.

It can be subsequently concluded that the relative distribution of population by region has undergone significant change from 1950 up to the 1970s. Firstly, during the period from 1950 to 1955, while the total population increased at an annual rate of about 1.4 percent, the rate of increase was lower than the national average in the areas of Minami-kanto, Nishi-kinki, Hokkaido, and Tokai. In the Hokuriku and Tosan regions, the population had actually declined, albeit only a minor one.

As a result, the share accounted for by the regional population in 1955 increased in Minami-kanto, Nishi-kinki and Hokkaido, while it remained unchanged in Tokaido and dropped in other regions.

From 1955 to 1960, while the rate of population increase in all 11 regions was lower than that of the previous five-year period, in Minami-kanto, Nishi-kinki, Tokai, and Hokkaido, the rate of increase during this period, as in the previous five-year period, exceeded the national average (0.9 percent). However, in the remaining regions excluding Kyushu and Okinawa, the population actually dropped. As a result, while the share of regional population continued to expand in Minami-kanto, Nishi-kinki and Tokai, it remained unchanged in Hokkaido and decreased in the other regions.

The Japanese economy achieved spectacular growth subsequent to 1960, and in the region including the so-called greater metropolitan area comprised of Minami-kanto, Nishi-kinki and Tokai, the rate of population increase was higher than in the previous five-year period, and considerably higher than the national average (1.0 percent). On the other hand, the rate of population increase in the other remaining regions turned out to fall below the national average. Of these regions, while the population began to increase in Kita-kanto and Higashi-kinki, in addition to the population decline in Kyushu and Okinawa, with the exception of Hokkaido, the degree of population decline was further accentuated.

As the result, the share of regional population in 1965 expanded to a level of 21.2 percent for Minami-kanto, 13.2 percent for Nishi-kinki, and 11.0 percent for Tokai. When compared to all other regions, including Hokkaido, the share of regional population was lower in 1965 than it was five years earlier. In short, due to the development of polarized distribution of the population between metropolitan and non-metropolitan areas as a result of population increases in metropolitan areas and decreases in non-metropolitan areas, the share of regional population has shown a clear pattern of expansion in the metropolitan areas and that of reduction in non-metropolitan areas.

By the mid-1960s, the regional population distribution began to indicate a trend never seen in the past. While the rate of population increase during the 1965 - 1970 period was lower than that of the previous five years in Minami-kanto, Nishi-kinki, Tokai, and Hokkaido, the rate of increase in Kita-kanto and Higashi-kinki continued to climb up, while the rate of increase in Chugoku, which had been on the decline, shifted to actually record an upturn. In all other remaining regions, the rate of population decrease underwent a certain degree of relaxation.

As a result, a shift in the distribution pattern was clearly observed in 1970, one characterized by an increasing population share in the metropolitan regions and decreasing further in non-metropolitan regions.

From 1970 to 1975, while the rate of increase in the three regions of Minami-kanto, Nishi-kinki and Tokai had metropolitan continued to decline to lower levels, in other regions it either rose or shifted from a pattern of decline to one of increase. As a result, the population had increased in all 11 regions. The population growth rate was especially pronounced in Kita-kanto and Higashi-kinki, and. resultantly, while the share of regional population in 1975 continued to expand in the three metropolitan regions of Minami-kanto, Nishi-kinki and Tokai, the share of regional population shifted from a pattern of decline to one of rise in Kita-kanto and Higashi-kinki. However, the share of regional population in other regions continued to exhibit a declining tendency.

This means that the share of regional population increased not only in both the Keihin metropolitan area that, constitutes Minami-kanto, and the Keihanshin metropolitan, constituting Nishi-kinki, but also in their respective adjacent regions; in Kita-kanto in the case of Minami-kanto, and in Higashi-kinki in the case of Nishi-kinki.

From 1975 to 1980, while the population growth rate showed the increase in the three regions; Hokkaido, Tohoku, and Kyushu and Okinawa, it declined in all other regions. Particularly in Minami-kanto, the population growth rate decreased significantly from the 2.3 percent recorded in 1975 to 1.2 percent in 1980; in Nishi-kinki, from 1.5 percent to 0.6 percent; and in Tokai, from 1.6 percent to 0.9 percent. By contrast, the population increased at a rate of 1.5 percent in Higashi-kinki and by 1.4 percent in Kita-kanto, the first and second highest rates of increase among the said 11 regions.

As a result, the share of regional population in both of these regions showed a trend of continuous increase in 1980. By contrast, while the rising tendency of the share of regional population continued in Minami-kanto as before, the extent of the increase was limited. Furthermore, the population in Nishi-kinki, which accounted for 14.0 percent of Japan's total population in 1975, dropped to 13.8 percent in 1980. In other regions, as in the past, the share of regional population either indicated a declining tendency or remain unchanged.

In the recent past, between 1980 to 1984, this tendency has virtually been identical. In this period, with the declining fertility, the average rate of population growth for the whole country dropped from the 0.9 percent recorded in 1980 to 0.7 percent. This resulted in the lowering of the population growth rate in all regions. Minami-kanto and Higashi-kinki each recorded the highest growth rates of 1.1 percent, followed by Kita-kanto with a growth rate of 1.0 percent.

As a result, the only regions that continued to show an increase in the share of regional population were Minami-kanto and Kita-kanto. In all other regions, it either remained unchanged or dropped.

Therefore, when looking at the changes in the share of regional population in the 11 regions concerned from 1950 to 1984, it can be seen that it was in Minami-kanto that the share of regional population increased consecutively. On the contrary, the areas that indicated a declining tendency after 1950 were the five regions of Tohoku, Hokuriku and Tosan, Chugoku, Shikoku, and Kyushu and Okinawa. Meanwhile, while the share of regional population continued to increase in the metropolitan areas including Nishi-kinki and Tokai from 1950 to 1975, thereafter, it has declined in Nishi-kinki and remained unchanged in Tokai.

Furthermore, while the share of regional population tended to decline in Kita-kanto and Higashi-kinki until 1970, since then it has

tended to increase. In Hokkaido, the share of regional population increased until 1955, thereafter it has tended to decline (Tables 1, 2 & 3).

The three regions of Minami-kanto, Nishi-kinki and Tokai, consisting of three major metropolitan areas, may be called the Tokaido Megalopolis. Its population stood at 30.923 million, or 36.8 percent of Japan's total population, as of 1975. The concentration of population in these areas has advanced sharply since then, so that their combined population figures reached 60.12 million, or 50.0 percent of Japan's total population, as of 1984.

Table 4 shows the results obtained by calculating the concentration indicies to determine how these changes in population distribution are affecting the concentration and dispersion of Japan's population distribution. A glance at this table indicates that changes in the distribution of the regional population has consistently been in the direction of imbalanced distribution.

(2) Regional Population Density and Its Change

The absolute distribution of the population and changes since 1950 are examined here in terms of population density, that is, the ratio of the population to the acreage by region.

Although Japan's population density was  $226/km^2$  in 1950, it has risen to  $314/km^2$  by 1980, and to  $316/km^2$  by 1984. Examining the change in population density by region between 1950 and 1980, it can be recognized that the densities as of 1980 are higher than those as of 1950 in all regions, excluding Shikoku, where the density in 1980 was identical to that in 1950. However, this does not mean that the population density consecutively indicated a tendency to increase during this period in each region. On the contrary, different regions indicated considerably different patterns of change in their respective situations of population density.

There are four regions where the population density rose consistently over the past 34 years; Minami-kanto, Nishi-kinki, Tokai and Hokkaido. With the exception of Hokkaido, all of those regions include major metropolitan areas in this country. The population density in Minami-kanto augmented more than two-fold during this period; from the 967/km<sup>2</sup> recorded in 1950 to 2,126/km<sup>2</sup> recorded in 1980 to 2,219/km<sup>2</sup> recorded in 1984. The population density in Nishi-kinki rose to 1.8 folds, from 606/km<sup>2</sup> in 1950 to 1,110/km<sup>2</sup> in 1984, while it increased to 1.5 times in Tokai, from 303/km<sup>2</sup> to 468/km<sup>2</sup>. Therefore, the population density in the so-called Tokaido megalopolis consisting of Minami-kanto, Tokai and Nishi-kinki rose from 538/km<sup>2</sup> in 1950 to 1,043/km<sup>2</sup> in 1984. By contrast, in other regions, the population density, while increasing in the 1950s, decreased during the 1960 - 1970 period, and since 1975, it has been expanding.

Table 6 shows the difference indicies of population density, measuring the relative degree of change in regional population density compared to that in national one, for eleven regions from 1950 to 1984. According to this table, while the population densities in all regions in 1984 either remained unchanged or rose in comparison with the level recorded in 1950, the relative degree of population concentration per land area did not necessarily rise. That is to say, the only regions where the difference index of population density in 1984 increased over the level recorded in 1950 were Minami-kanto, Nishi-kinki and Tokai. In other regions, while the population density did rise, the relative degrees of population concentration per land area in all other regions in 1984 were lower than the levels recorded in 1950.

As noted earlier, while the population accumulation has tended to be pronounced in Kita-kanto and Higashi-kinki including, the peripheral zones of Keihin and Keihanshin metropolitan areas as opposed to its decelerate in the three metropolitan regions of tendency to Nishi-kinki and Tokai since 1975, the difference index of Minami-kanto, population density dropped to 107 and 89, respectively, in 1984, in comparison to 122 and 93 in 1950, indicating that the relative degree of accumulation recorded in 1950 has not been recovered. On the contrary, degree of population concentration in the three metropolitan the regions, relatively speaking, increased over the level recorded in 1950 as evidenced by the fact that the difference index of population density in the three metropolitan regions taken together rose from 238 recorded in 1950 to 328 in 1984. Separately, the index in question rose from 428 to 698 in Minami-kanto, from 268 to 349 in Nishi-kinki, and from 134 to in Tokai. In contrast, the same index in non-metropolitan regions 147 continued to show a declining tendency.

### 2. Population Distribution by Prefecture and Its Change

### (1) Changes in Share of Prefectural Population

of Population distribution is now examined in terms such microscopic units as To, Do, Fu and Ken or prefectures. Looking at fluctuations in prefectural populations for each of the five-year periods between 1950 and 1980 and the four-year periods between 1980 and 1984 as indicated in Table 7, it can be seen that a polarization phenomenon had occurred, that is, while the overwhelming number of prefectures experienced a population increase from 1950 to 1955, from 1955 to 1970 the number of prefectures experiencing a population increase and that experiencing a population decline were equally During this period, as was seen in the previous section, there divided. a marked contrast in population fluctuations among different was However, from the 1970s the characteristics in prefectures. distribution of population has been one of population increase as evidenced by the fact that the overwhelming number of prefectures again experienced a population increase.

Looking at the changes in the proportion of the prefectural population to the overall population shown in Figure 2 and Table 9, it can be found that of the 47 prefectures, Kanagawa and Aichi were the only prefectures where the said proportion consistently rose after 1950. The population of Kanagawa, which accounted for 2.96 percent of total population in 1950, expanded to 5.92 percent by 1980, and to 6.08 percent by 1984. In Aichi, the proportion was 4.03 percent in 1950, 5.31 percent in 1980, and 5.33 percent in 1984. By contrast, although the proportion of Tokyo's population to total population, the highest in Japan, increased from 9.46 percent in 1950 to 10.96 percent by 1965, the to 9.93 percent in 1980 and to 9.81 share since then has declined, percent in 1984. Similarly, the proportion of Osaka's population to the total population, the second highest following that of Tokyo, increased from 4.59 percent in 1950 to 7.54 percent in 1975, but declined to 7.24 percent in 1980 and to 7.19 percent in 1984. A similar pattern of change was observed in the proportion of Hyogo's population to the total population (Figures 1 and 3).

Of the 47 prefectures comprising Japan, the prefecture with the highest rate of population increase since 1975 was Saitama, followed by Chiba. The shares of population of these prefectures declined in the 1950 - 1955 period, but have increased ever since. While the shares of population were at the 2-percent level in 1950, they rose to the 4-percent level by 1984 in both prefectures. Meanwhile, in the prefectures of Ibaraki, Shiga and Nara, the rate of population increase recorded a high level since the period 1965 - 1970, the shares of population of these prefectures, which declined upto the 1965 - 1970, has increased since then.

Of the prefectures, excluding the ones noted above, with a ralatively large share of prefectural population, Shizuoka and Kyoto showed almost unchanged share of population. In Fukuoka, the share expanded in the 1950 - 1955 period and declined thereafter, but since 1975 it has once again expanded. In Hokkaido the share of population has increased considerably ever since.

Meanwhile, excluding Okinawa where the share of population has not indicated a fixed pattern of change, all prefectures with a relatively minor share of population have consecutively declined since 1950.

Thus, while the shares of prefectural population had consistently shrunk in the large majority of prefectures outside the metropolitan areas, those had increased consistently in the prefectures forming Japan's major metropolitan areas and in Hokkaido from 1950 until 1970. In the prefectures located in the periphery of the major metropolitan areas the shares of population tended to shrink until 1970. In the 1970, however, this pattern of change reversed itself, with the share of population shrinking in the metropolitan areas and expanding in the prefectures located in the periphery of those metropolitan areas.

A glance at the population concentration index since 1950 computed on the basis of prefectural populations reveals that the index has consecutively expanded since 1950, demonstrating that the imbalanced distribution of Japan's population has advanced gradually since 1950. Since the index of concentration of per capita income for prefectures has declined steadily, from 46.8 in 1970 to 45.3 in 1975, and to 45.2 in 1978, it can be inferred that population distribution is even more dispersed than that of income. In addition, this inference suggests that the imbalanced distribution of population since the 1960s has not necessarily been caused by economic factors.

(2) Prefectural Population Density and Its Change

Although changes in the population density of prefectures since 1950 have been virtually the same as observed in those in the population the gap between one prefecture to another has density by region, actually widened. In other words, in 1950 the difference index of population density was highest in Tokyo with 1,368, and lowest in Hokkaido with 24. In addition to Tokyo, there were 27 prefectures with an index exceeding 100, including Osaka (941), Kanagawa (466), Fukuoka (319), Aichi (297), Saitama (250), and Kagawa (225). By contrast, in there were only 15 prefectures with an index exceeding 100, and 1984. the gap between the highest (Tokyo 1,690) and the lowest (Hokkaido 22) became wider than ever. In 1984, in addition to Tokyo, the prefectures with an index exceeding 100 included Osaka (1,433), Kanagawa (942), Saitama (471), Aichi (386), Chiba (305), Fukuoka (294), Hyogo (194), and Okinawa (160) (Table 11).

Looking at the changes in the number of prefectures with a difference index exceeding 100 every five years since 1950, it can be observed that while there were 27 in 1950, the number has declined steadily since then, with 21 in 1955, 18 in 1960, 16 between 1965 to 1975, and 15 since 1980. Furthermore, the gap between the highest index and lowest has expanded during this period.

From the foregoing, it can be disclosed that the gap in imbalanced distribution of population is even more pronounced between the cased calculated on the basis of 47 prefectures and that measured on the basis of 11 regions, and the gap is widening.

### Conclusion

This paper has attempted to analyze the various changes that have taken place in the geographical distribution of Japan's population since 1950, mainly by dividing Japan into 11 regions. It has also attempted to outline the features of the changes in the distribution of Japanese population by dividing these regions into even smaller units referred to as 47 prefectures. Furthermore, a look at the changes in the population distribution in terms of much smaller administrative units such as *shi*, *machi* and *mura* will further reveal different aspects of those changes (\*1), (\*2), (\*3). This is reflected in the deceleration of population growth, or its decrease, in urban or metropolitan centers accompanying the accumulation of population in urban or metropolitan areas, as well as in the expansion of zones undergoing rapid increases in population and forming a donut-like ring around an urban or metropolitan center with the passage of time. Space does not permit examination of this aspect, but it is one of the important aspects on changes taking place in the geographic distribution of the Japanese population that cannot be ignored.

### Notes

- (\*1) Otomo, Atsushi, <u>Geographical Distribution of Urban Population in</u> Japan, Taimeido, Tokyo, 1979.
- (\*2) Otomo, Atsushi, <u>Geographical Distribution of Japanese Population</u> and <u>its Changes</u>, 1980. Population Census Monograph Series, Statistics Bureau, Office of the Prime Minister, Japan, 1983.
- (\*3) Otomo, Atsushi, "Geographical Distribution and Urbanization," <u>Population of Japan</u>, Country Monograph Series No. 11 1984, ESCAP, UN. pp.96 - 122.

.

Population by Region

(Unit: 1,000 persons)

								-
Region	1950	1955	1960	1965	1970	1975	1980	1984
Japan	84,115	90,077	94,302	99,209	104,665	111,940	117,060	120,235
Hokkaido	4,296	4,773	5,039	5,172	5,184	5,388	5,576	5,677
Tohoku	9,022	9,334	9,326	9,108	9,031	9,233	9,572	9,699
Kita-kanto	5,191	5,225	5,139	5,183	5,382	5,797	6,199	6,437
Minami-kanto	13,051	15,424	17,864	21,017	24,113	27,042	28,699	29,949
Hokuriku 'Tosan	8,052	8,043	7,964	7,877	7,856	8,107	8,357	8,479
Tokai	8,868	9,489	10,086	10,926	11,778	12,726	13,315	13,688
Higashi-kinki	2,607	2,637	2,626	2,706	2,863	3,135	3,376	3,52
Nishi-kinki	9,000	10,174	11,405	13,070	14,538	15,696	16,146	16,480
Chugoku	6,779	6,992	6,945	6,871	6,997	7,366	7,586	7,71
Shikoku	4,220	4,245	4,121	3,975	3,904	4,040	4,163	4,200
Kyushu 'Okinawa	13,012	13,739	13,787	13,304	13,017	13,460	14,072	14,39
Total of								
Minami-kanto, Tokai, and Nishi-kinki	30,918	35,088	39,355	45,013	50,430	55,464	57,621	60,117

(noce)	ionoku:	ADMOLI, Iwace, Hiyagi, Akita, Iamagata, Fukushima
	Kita-kanto:	Ibaraki, Tochigi, Gumma
	Minami-kanto:	Saitama, Chiba, Tokyo, Kanagawa
	Hokuriku <sup>.</sup>	
	'Tosan:	Niigata, Toyama, Ishikawa, Fukui, Yamanashi, Nagano
	Tokai:	Gifu, Shizuoka, Aichi, Mie
	Higashi-kinki:	Shiga, Nara, Wakayama
	Nishi-kinki:	Kyoto, Osaka, Hyogo
	Chugoku:	Tottori, Shimane, Okayama, Hiroshima, Yamaguchi
	Shikoku:	Tokushima, Kagawa, Ehime, Kochi
	Kyushu:	Fukuoka, Saga, Nagasaki, Kumamoto, Oita, Miyazaki,
		Kagoshima

(Source) Population of Japan, 1980 Population Census Abridged Report Series, No. 1", The Statistics Bureau of the Prime Minister's Office "Estimated Population on October 1, 1984", The Statistics Bureau of Management and Coordination Agency

Region	1950	1955	1960	1965	1970	1975	1980	1984
Japan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hokkaido	5,1	5.3	5.3	5.2	5.0	4.8	4.8	4.7
Tohoku	10.7	10.4	9.9	9.2	8.6	8,2	8.2	8.1
Kita-kanto	6.2	5.8	5.4	5.2	5.1	5.2	5.3	5.4
Minami-kanto	15.5	17.1	18.9	21.2	23.0	24.2	24.5	24.9
Hokuriku •Tosan	9.6	8.9	8.4	7.9	7.5	7.2	7.1	7.1
Tokai	10.5	10.5	10.7	11.0	11.3	11.4	11.4	11.4
Higashi-kinki	3.1	2.9	2.8	2.7	2.7	2.8	2.9	2.9
Nishi-kinki	10.7	11.3	12.1	13.2	13.9	14.0	13.8	13.7
Chugoku	8.1	7.8	7.4	6.9	6.7	6.6	6.5	6.4
Shikoku	5.0	4.7	4.4	4.0	3.7	3.6	3.6	3.5
Kyushu •Okinawa	15.5	15.3	14.6	13.4	12.4	12.0	12.0	12.0
Total of Minami-kanto, Tokai, and Nishi-kinki	36.8	39.0	41.7	45.4	48.2	49.5	49.7	50.0

Table 2	Share	e of Regiona	<b>1</b>	Popul	Lation	
	(The	proportion	to	the	national	population)

Table 3 Annual Rate of Population Growth by Region

							(percent
Region	1950	1955	1960	1965	1970	1975	1980 1984
Japan	1.4	1 0.9	1.0	1.1	L 1.4	<b>i</b> 0.9	0.7
Hokkaido	2.3	l 1.1	0.5	0.0	0.0	5 0.9	0.5
Tohoku	0.3	7 -0.0	-0.5	-0.2	2 0.4	4 0.7	0.3
Kita-kanto	0.1	L -0.3	0.2	0.0	3 1.9	5 1.4	1.0
Minami-kanto	3.4	4 3.0	3.3	2.8	3 2.3	3 1.2	1.1
Hokuriku •Tosan	-0.0	0 -0.2	2 -0.2	-0.1	1 0.0	5 0.6	0.4
Tokai	1.4	4 1.2	2 1.6	1.5	5 1.0	6 0.9	0.7
Higashi-kinki	0.2	2 -0.1	0.6	1.1	1.8	3 1.5	1.1
Nishi-kinki	2.5	5 2,3	3 2.8	2.2	2 1.5	5 0.6	0.5
Chugoku	0.0	5 -0.1	-0.2	0.4	4 1.0	0.6	0.4
Shikoku	0.1	1 -0.6	5 -0.7	-0.4	ŧ 0.1	7 0.6	0.3
Kyushu 'Okinawa	1.3	<b>1 0.</b> 1	-0.7	-0.4	4 0.	7 0.9	0.6
Total of Minami-kanto, Tokai, and Nishi-kinki	2.0	5 2.3	3 2.7	2.3	3 1.9	9 1.0	0.8

							_	
Year	1950	1955	1960	1965	1970	1975	1980	1984
Concentration Index	25,9	27.5	29.3	31,6	33.3	34.3	34.5	35.4

Table 4 Concentration Index of Regional Populations

Note: calculated on the basis of 11 regions

Table 5 Population Density by Region

(persons/km<sup>2</sup>)

							(persor	ns/km²)
Region	1950	1955	1960	1965	1970	1975	1980	1984
Japan	226	242	253	267	281	300	314	318
Hokkaido	51	57	60	62	62	64	67	68
Tohoku	135	139	139	136	135	138	143	145
Kita-kanto	275	277	272	275	285	307	329	341
Minami-kanto	967	1,143	1,324	1,557	1,787	2,004	2,126	2,219
Hokuriku •Tosan	186	186	184	182	182	187	193	196
Tokai	303	324	345	373	402	435	455	468
Higashi-kinki	210	212	211	218	230	252	272	283
Nishi-kinki	606	685	768	880	979	1,057	1,087	1,110
Chugoku	213	219	218	216	220	231	238	242
Shikoku	224	226	219	211	208	215	221	224
Kyushu •Okinawa	293	310	311	300	293	303	317	324
Total of Minami-kanto, Tokai, and Nishi-kinki	537	609	683	781	875	963	1,009	1,043

Ta	b	le	6
----	---	----	---

Difference Index of Population Density by Region

Region	1950	1955	1960	1965	1970	1975	1980	1984
Japan	100	100	100	100	100	100	100	100
Hokkaido	23	24	24	23	22	21	21	21
Tohoku	60	57	55	51	48	46	46	46
Kita-kanto	122	144	108	103	101	102	105	107
Minami-kanto	428	472	523	583	636	668	677	698
Hokuriku •Tosan	82	77	73	68	65	62	61	62
Tokai	134	134	136	140	143	145	145	147
Higashi-kinki	93	88	83	82	82	84	87	89
Nishi-kinki	268	283	304	330	348	352	346	349
Chugoku	94	90	86	81	78	77	76	76
Shikoku	99	93	87	79	74	72	70	70
Kyushu •Okinawa	130	128	123	112	104	101	101	102
Total of								
Minami-kanto Tokai, and Nichi-kinki	238	252	270	293	311	321	321	328

Table 7	Number of Prefectures	Experiencing a	a Population
	Increase and Decrease		

Year	1950	1955	1960	1965	1970	1975	1980	1984
Increase	4	0	21	22	27	42	46	46
Decrease		7	26	25	20	5	1	1

Table 8 Concentration Index of Prefectural Populations

Year	1950	1955	1960	1965	1970	1975	1980	1984
Concentration Index	29.7	30.9	32.9	35.7	38.2	39.5	39.8	40.3
Table 9

Proportion of Prefectural Populations to National Population, 1950 to 1984

									(%)
P	refectures	1950	1955	1960	1965	1970	1975	1980	1984
Jap	an	100.00	100.00	100.00	100.00	100.00	100,00	100.00	100.00
01	Hokkaido	5.11	5.30	5.34	5.21	4.95	4.77	4.76	4.72
02	Aomori	1.53	1.53	1.51	1.43	1.36	1.31	1.30	1.27
03	Iwate	1.60	1.58	1.54	1.42	1.31	1,24	1.21	1.19
04	Miyagi	1.98	1,92	1.85	1.77	1.74	1.75	1,78	1.80
05	Akita	1.56	1.50	1.42	1.29	1.19	1,10	1.07	1.04
06	Yamagata	1.61	1.50	1.40	1.27	1.17	1.09	1.07	1.05
07	Fukushima	2.45	2.33	2.18	2.00	1.86	1.76	1.74	1.72
80	Ibaraki	2,42	2.29	2,17	2.07	2.05	2.09	2,19	2,24
09	Tochigi	1.84	1.72	1.61	1.53	1,51	1.52	1.53	1.53
10	Gumma	1.90	1.79	1.67	1.62	1,58	1,57	1.58	1.58
11	Saitama	2,55	2.51	2.58	3.04	3.69	4.31	4.63	4.80
12	Chiba	2.54	2,45	2.45	2.72	3,22	3.71	4.05	4.22
13	Tokyo	7.46	8.92	10.27	10.96	10.90	10.43	9.93	9.81
14	Kanagawa	2.96	3.24	3.65	4.47	5.23	5.72	5.92	6.08
15	Niigata	2.93	2.75	2.59	2.42	2.26	2.14	2.09	2.06
16	Toyama	1.20	1.13	1.10	1.03	0.98	0.96	0.94	0.93
17	Ishikawa	1.14	1.07	1.03	0.99	0.96	0.96	0.96	0.95
18	Fukui	0.89	0.84	0.80	0.76	0.71	0.69	0.68	0.67
19	Yamanashi	0.96	0.90	0.83	0.77	0.73	0.70	0.69	0.68
20	Nagano	2.45	2.24	2,10	1.97	1.87	1.80	1.78	1.76
21	Gifu	1.84	1.76	1.74	1,71	1.68	1.67	1.67	1.67
22	Shizuoka	2.94	2.94	2.92	2,94	2.95	2.96	2.94	2.94
23	Aichi	4.03	4.18	4.46	4.84	5.15	5.29	5.31	5.33
24	Mie	1.74	1.65	1.57	1,53	1.47	1.45	1.44	1.44
25	Shiga	1.02	0,95	0.89	0.86	0.85	0.88	0.92	0.95
26	Kyoto	2.18	2,15	2.11	2.12	2.15	2.17	2.16	2.15
27	Osaka	4.59	5.13	5,84	6.71	7.28	7.40	7.24	7.19
28	Hyogo	3.94	4.02	4.14	4.34	4.46	4.46	4.40	4.37
29	Nara	0.91	0.86	0,83	0.83	0.89	0.96	1.03	1.07
30	Wakayama	1.17	1.12	1.06	1.04	1.00	0.96	0.93	0.91
31	Tottori	0.71	0.68	0.64	0.58	0.54	0.52	0,52	0.51
32	Shimane	1.08	1.03	0.94	0.83	0.74	0.69	0.67	0.66
33	Okayama	1.97	1.88	1.77	1.66	1.63	1.62	1.60	1.58
34	Hiroshima	2.48	2.39	2.32	2.30	2.33	2.36	2.34	2.33
35	Yamaguchi	1,83	1.79	1.70	1,56	1.44	1,39	1.36	1.33
36	Tokushima	1.04	0.97	0.90	0.82	0.76	0.72	0.70	0.69
37	Kagawa	1.12	1.05	0.97	0.91	0.87	0.86	0.85	0.85
38	Ehime	1,81	1.71	1.59	1.46	1.35	1.31	1.29	1.27
39	Kochi	1.04	098	0.91	0.82	0,75	0.72	0.71	0.69
40	Fukuoka	4.20	4.28	4.25	4.00	3.85	3.84	3.89	3.91
41	Saga	1.12	1.08	1.00	0.88	0.80	0.75	0.74	0.73
42	Nagasaki	1.96	1.94	1,87	1.65	1.50	1.40	1.36	1.33
43	Kumamoto	2,17	2.10	1.97	1.78	1.62	1.53	1.53	1.52
44	Oita	1.49	1.42	1.31	1.20	1,10	1.06	1.05	1.03
45	Miyazaki	1.30	1.26	1.20	1,09	1.00	0.97	0.98	0.98
46	Kagoshima	2.14	2.27	2.08	1.87	1.65	1.54	1.52	1.51
47	Okinawa	1.09	0,89	0.94	0.94	0,90	0.93	0.95	0.97

Source: The reference 2) and "Estimated Population on October 1, 1984" The Statistics Bureau of Management and Coordination Agency, 1985.

\* The population of Kagoshima Prefecture includes the population of Amami Islands in 1950.

#### Table 10

Average Rate of Population Increase and Decrease by the Urban and Rural Prefectures between 1950 and 1984

								(percent)
P	refectures	1950- 1955	1955- 1960	1960- 1965	1965- 1970	1970- 1975	1975- 1980	1980- 1984
Jap	an	1.4	0.9	1.0	1.1	1.4	0.9	0.7
01	Hokkaido	2,1	1.1	0.5	0.0	0.6	0.9	0,5
02	Aomori	1.5	0.6	- 0.1	0.2	0.6	0.7	0.1
03	Iwate	1.2	0.3	-0.5	- 0.6	0.2	0.5	0.2
04	Miyagi	0.8	0.2	0.1	0.7	1.5	1.3	0.9
05	Akita	0.6	- 0.2	-0.8	- 0,6	-0.1	0.4	- 0.1
06	Yamagata	- 0.1	- 0.5	-0.9	- 0.6	- 0.1	0.5	0.1
07	Fukushima	0.3	- 0.4	-0.7	- 0.4	0.3	0.6	0.4
08	Ibaraki	0.2	-0.2	0.1	0.8	1.8	1.8	1.3
09	Tochigi	- 0.0	-0.4	0.1	0.8	1.5	1.1	0.7
10	Gumma	0.2	-0.4	0.3	0.7	1.1	1.0	0.7
11	Saitama	1.1	1.4	4.4	5.1	4.5	2.4	1.6
12	Chiba	0.6	0.9	3.2	4.5	4.3	2.7	1.7
13	Tokyo	5.1	3.8	2.3	1.0	0.5	- 0.1	0.4
14	Kanagawa	3.3	3.4	5,2	4.3	3.2	1.6	1.4
15	Niigata	0.1	-0.3	-0.4	- 0.3	0.3	0.5	0.2
16	Toyama	0.2	0.2	-0.1	0.1	0.8	0.6	0.3
17	Ishikawa	0.2	0.1	0.1	0.4	1.3	0.9	0.5
18	Fukui	0.0	-0.0	-0.1	- 0.2	0.8	0.5	0.5
19	Yamanashi	-0.1	-0.6	-0.5	- 0.0	0.5	0.5	0.5
20	Nagano	- 0.4	-0.4	- 0.2	- 0.0	0.6	0.6	0.4
21	Gifu	0.5	0.7	0.7	0.7	1.2	1.0	0.7
22	Shizuoka	1.4	0.8	1.1	1.2	1.4	0.8	0.7
23	Aichi	2.1	2.2	2.7	2.3	1.9	1.0	0.7
24	Mie	0.3	-0.0	0.4	0.4	1.1	0.7	0.7
25	Shiga	- 0.2	-0.3	0.3	0.8	2.1	1.8	1,3
26	Kyoto	1.1	0.6	1.1	1.4	1.5	0.8	0.6
27	Osaka	3.7	3.6	3.9	2.7	1.7	0.5	0.5
28	Hyogo	1.8	1.5	2.0	1.6	1.4	0.6	0.5
29	Nara	0.3	0.1	1,1	2.4	3.0	2.3	1.7
30	Wakayama	0.5	- 0.1	0.5	0.3	0.6	0.3	0.1
31	Tottori	0.5	-0.5	-0.7	-0.4	0.4	0.8	0.4
32	Shimane	0.4	-0.9	-1.6	- 1.2	-0.1	0.4	0.1
33	Okayama	0.3	-0.2	-0.3	0.7	1.2	0.6	0.4
34	Hiroshima	0.6	0.3	0.9	1.3	1.7	0.7	0.6
35	Yamaguchi	0.9	-0.1	- 0.7	- 0.4	0.6	0.4	0,2
36	Tokushima	-0.0	-0.7	-0.8	- 0.6	0.4	0.5	0.2
37	Kagawa	-0.0	-0.5	- 0.4	0.2	1.1	0.8	0.5
38	Ehime	0.2	-0.5	- 0.7	-0.4	0.7	0.6	0.3
39	Kochi	0.2	-0.6	- 1.0	- 0.6	0.5	0.6	0.1
40	Fukuoka	1.8	0.7	- 0.2	0.3	1.3	1.2	0.8
41	Saga	0.6	-0.6	-1.6	-0.8	- 0.0	0.7	0.3
42	Nagasaki	1.2	0.1	- 1.4	- 0.9	0.0	0.2	0,1
43	Kumamoto	0.7	-0.4	-0.9	- 0.8	0.2	0.9	0.5
44	Oita	0.4	- 0.6	-0.9	-0.5	0.6	0.6	0.3
45	Miyazaki	0.9	-0.1	- 1.0	-0.6	0.6	1.2	0.5
46	Kagoshima	*0.2	-0.8	-1,1	- 1.4	-0.1	0.7	0.4
47	Okinawa	*2.8	2.0	1.1	0.2	2.0	1.2	1.2

Source: The reference 2) and "Estimated Population on October 1, 1984" The Statistics Bureau of Management and Coordination Agency, 1985.

## Table 11 Difference Index of Population density by Prefecture, 1950 to 1984

									(%)
Pre	efectures	1950	1955	1960	1965	1970	1975	1980	1984
Jap	an	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
01	Hokkaido	24.3	25.2	25.3	24.7	23.5	22.7	22.6	22.3
02	Aomori	58.8	59.5	58.5	55,1	52.7	51.0	50.3	49.2
03	Iwate	.38.9	38.4	37.5	34.5	32.0	30,3	29.6	29.1
04	Miyagi	101.3	97.9	94.5	90.3	89.0	89.3	91,1	91.6
05	Akita	50.0	47.9	45.5	41.2	38.1	35.3	34.4	33.4
06	Yamagata	64.2	59,9	56.1	50.6	46.6	43.7	42.7	41.8
07	Fukushima	66.4	62.8	58.9	53.9	50,2	47.7	47.1	46.4
08	Ibaraki	148.2	140.1	132.8	126.6	125,3	128.3	133.8	136.5
09	Tochigi	106.6	99.2	93.3	88.8	87.5	88.3	88.9	88.9
10	Gumma	111.9	105.4	98.4	94.8	92.9	92.0	92.7	92.6
11	Saitama	249.6	245.9	253.0	297.0	362.3	423.0	454.5	470.6
12	Chiba	188.1	181.0	181.0	200.4	235.9	270.3	293.3	305.0
13	Tokyo	1,367.7	1,641.7	1,888.5	2,006.4	1,896.1	1,813.7	1,715.9	1,690.4
14	Kanagawa	466.4	510.7	576.3	698.9	816.7	892.0	920.1	941.8
15	Niigata	86.7	81.4	76.7	71.5	66.9	63.3	62.1	61.0
16	Toyama	104.9	99.2	96.0	90.3	86.1	84.0	82.8	81.1
17	Ishikawa	100.9	95.0	91.7	87.6	85.1	85.0	85.0	84.2
18	Fukui	78.3	73.1	71.1	67.0	63.3	71.7	60.5	59.8
19	Yamanashi	80.5	74.8	69.2	64.0	60.9	58.3	57.3	60.1
20	Nagano	66.8	61.2	57.7	53.9	51.2	49.7	48.7	48.3
21	Gifu	65.0	62.4	61.7	59.9	59.1	58.7	58.9	58.8
22	Shizuoka	140.7	140.9	140.3	140.4	141.6	142.0	141.1	140.9
23	Aichi	297.3	307.9	328.9	355.1	376.9	386.0	386.3	386.1
24	Mie	112.4	106.6	102.0	98.5	95.0	94.0	93.0	92.9
20	Sniga	94.7	122.7	170 0	170.9	172.7	175 2	<u> </u>	87.9
20	Kyoto Ozaka	1/5.2	1/2.7	1/0.8	170.0	1/3.1	1/5.3	1/4.5	1/3.4
27	Usaka	940.7	1,054.5	1,100.4	1,355.1	1,402.0	1,485.0	1,447.5	1,432.8
20	нуодо	1/2./	1/9.8	102.4	193.0	198.9	199.0	195.5	194.1
29	Nala	91.0	00.0	03.0	03.9	09.7	97.3	104.5	108.4
21	Tottori	76 1	72 7	69.0	63.3	58.0	<u> </u>	55 1	54.5
32	Shimapo	61 1	57.9	53.0	02.2 A6 A	41 6	39.3	37 6	36.9
32	Okayama	104 0	08.8	93.7	90,1	85.8	95 3	84 1	93.0
34	Hiroshima	109.3	105 4	102 4	101 1	102.5	10/ 3	103.2	102.8
35	Yamaguchi	111.9	109.5	104.3	95.1	88.3	85 0	82.8	81 1
36	Tokushima	93.8	87.6	81.0	73.8	68.0	64.7	63.4	62 2
37	Kagawa	224.8	209.9	195.3	181.3	172.6	170.7	169.4	167.5
38	Ehime	119.0	112.8	105.1	95.9	89.3	86.3	84.7	83.0
39	Kochi	54.4	51.2	47.4	42.7	39.5	38.0	37.3	36.2
40	Fukuoka	318.6	325.6	323.3	302.2	291.1	289.3	292.7	293.8
41	Saga	173.9	167.4	154.9	135.6	123.8	115.3	113.4	111.5
42	Nagasaki	178.8	176.9	170.4	150.2	136,3	127.7	123.2	120.1
43	Kumamoto	109.3	106.2	99.6	89.9	81.9	77.3	77.1	76.5
44	Oita	87.6	83,5	77.5	70.4	65.1	62.7	61.8	60.7
45	Miyazaki	62.4	60.7	58.1	52.4	48.4	46.7	47.5	47,1
46	Kagoshima	102.2	92.6	85.0	76.0	67.3	62.7	62.1	61.3
47	Okinawa	111.5	138.4	146.2	146.4	150.2	154.7	156.7	159.8

Source: The reference 2) and "Estimated Population on October 1, 1984" The Statistics Bureau of Management and Coordination Agency, 1985.



### Figure 1 Annual Rate of Population Growth by Prefecture, 1950 to 1980



Source: The reference 2)





-71-

# Reference: "Map of Japan"



## CHAPTER 4

# FLUCTUATION OF MIGRATION PATTERN AND HUMAN DEVELOPMENT

Sumiko Uchino

Section Manager Section on Population Policy Institute of Population Problems Ministry of Health and Welfare

.

·

#### Introduction

Migration is in close correlation with trends in development. When economic development progresses smoothly and new demands on the work force are generated in particular areas, migration takes the form of people moving in search of better employment opportunities, higher living standards or a more whole some environment. In addition, new social changes such as the alteration of family structures, breakdown of the pattern of inherited professions between generations and changes in security for the aged resulting from consolidation of the social security system also cause migration.

Japan had experienced remarkable economic and social change after the war, which caused migration unseen in the prewar period in terms of scale and content.

Migration is a demographic response to economic and social change, and has the important function of promoting social and individual development. By meeting the demand for labor at the locations requiring economic development is made possible and individual desires them, centering on work are satisfied. Here, migration plays an active role in economic and human developments. However, migration does not necessarily play possitive macro and micro roles in continuous fashion, indicating that positive effects have limitations. When an active migration trend continues to a point exceeding certain limits--in other words, in the case of migration taking place due to inertia--negative effects are observed both socially and individually. However, migration movement does have self-correcting functions, but since this requires time, implementation of intervening policies becomes necessary in order to prevent harmful effects from becoming more adverse.

As a result of high economic growth in the postwar period, migration from rural areas had intensified in Japan, and, in some cases, the eldest sons, who represent the key labor force necessary for agriculture, migrated following the second and third sons. This trend was called the phenomenon of migration avalanche. Concentration of industries and population in large urban cities led to extremely efficient economic growth, but the extremely heavy concentration of industries and population has brought about outer diseconomies for enterprises on the one hand, and also has resulted in an aggravated living environment for the inhabitants on the other. This happens to be a worldwide phenomenon observed in both advanced and developing nations.

#### 1. Outline of Postwar Migration

Since 1954, following World War II, statistics on migration between cities, wards, towns and villages have been publicized as stipulated in the Inhabitants Registration Law (until 1967) and the Basic Resident Register Law (since 1968). However, there are some statistical problems, but these migration statistics have important values as statistics on migrations rarely found in the world.

The statistics shown here center on migration between cities, wards, towns and villages, and migration within the municipalities are Table 1 shows the nationwide total of such migration. Intraexcluded. and inter-prefectural migration, which is taken up in the following chapter, are also indicated in the Table for convenience purposes. High economic growth entered the full-scale stage at the first-half of the 1960s. In the latter half of the 1950s, the annual total of migration was at the 5-million level and the migration rate, the percentage of migrants to the total population, was less than 6%. However, migration dramatically increased at the first-half of the 1960s, and grew at a remarkable pace to reach to 6 million in one motion, and then 7 million. In 1969, at the end of the decade, migration reached the high level of 8 million, and the migration rate became 8% in a single bound. In 1973, migration reached its peak to record 8.54 million, however, in 1974, the following year, migration declined by as much as 0.51 million from the previous year registering 8.03 million. 1973, the year during which migration attained its highest level, was the year of the first oil crisis, causing the world economy to enter a period of economic recession from 1974. The Japanese economy was also affected by this worldwide economic depression, and the migration rate shifted to show a declining trend. It is clear from this impact of worldwide economic stagnancy that migration is significantly affected by the ups and downs of the economy.

The annual migration level of 8 million continued for 6 years from 1969 to 1974, and the migration rate almost continuously remained at the 8% level. However, since 1975, it began to decline annually. Migration dropped from the 7 million level in 1981 to record 6.9 million, and further to 6.56 million in 1984. It had dropped by 1.47 million in a period of only 10 years from 1974 to 1984.

An aspect of particular interest is that the peak period, which lasted for 6 years from 1969 to 1974 with annual migration registering figures at the 8 million level, is sandwiched between a period of increase which had continued for more than 10 years before the peak period and by a period of decrease, which was observed for 10 years subsequent to the peak, exhibiting a curve resembling the shape of Mt. Fuji. In other words, migration changed in relationship to the fluctuations in economic growth, recording a peak level during the period of high economic growth. While increases are seen during the preparatory period, decreases are observed during the stagnant period prior and subsequent to the peak period. The migration pattern may be or attaining a period of conspicuous growth assumed to be cyclical, subsequent to a period of gradual growth, then shifting to enter a period of decline. Although it is diffuclt to predict future changes in migratin, conspicuous fluctuation is not prospected based on the assumption that the economy will grow at a slow pace. However, the migration patterns are expected to undergo changes in terms of qualitative aspects as taken up later in more detail.

#### 2. Changes in the Migration Pattern

Quantitative changes in migration were discussed in the previous section, and in this section, changes in the migration pattern are analyzed from five different perspectives, which are: 1) intra-prefectural and inter-prefectural migration; 2) categorization of inter-prefectural migration patterns; 3) migration centering on three Large Metropolitan areas; 4) characteristics of migration of the female population; and 5) U-turn migration.

#### (1) Intra-prefectural and Inter-prefectural Migration

Table 1 shows intra- and inter-prefectural migration. Although the percentages for these two migration patterns are almost in a fifty-fifty relationship, an interesting change is observed when annual fluctuations are studied in closer detail, that is, while inter-prefectural migration accounted for slightly over 50% of the total during the period of high economic growth between 1962 and 1972, the rate was less than 50% during the preparatory and stagnant periods prior and subsequent to the high economic growth period, while the rate of intra-prefectural migration was higher during the same periods. In general, inter-prefectural migration can be considered to be long-distance migration, while intra-prefectural migration could be viewed as short-distance movement. Due to the increases in labor force demand in the period of high economic growth, demand was met by labor supplied even from areas situated in long-distance regions. However, during period of stagnancy or low economic growth, it is considered that it was enough and possible to meet similar demand by short-distance migration within the prefectures.

#### (2) Analysis of Inter-prefectural Migration Patterns

Japan is hereby divided roughly into 2 areas on the basis of the degree of urbanization, and migration changes are analyzed by identifying four migration patterns of (a) those within the three Large Metropolitan areas, (b) that within non-metropolitan areas, (c) that from non-metropolitan areas to metropolitan areas and (d) migration from metropolitan areas to non-metropolitan areas as illustrated in Figures 1 and 2.

Figure 1 shows the percentage distribution of the 4 migration patterns, while Figure 2 indicates the number of migrants of these 4 migration patterns. The characteristics of the classification of these 4 areas are the broad division of the entire country into metropolitan areas, in which urbanization and industrialization are conspicuous, and which include all other areas excluding these non-metropolitan areas, metropolitan areas. The objective of such division is to analyze 4 namely migration between the 3 metropolitan areas migration patterns, and non-metropolitan areas throughout the nation, and that within metropolitan and non-metropolitan areas in terms of mutual interrelationship.

(3) Termination of Period of Concentrated Migration to Metropolitan Areas

The concentrated migration to the three Large Metropolitan areas (definition of three metropolitan areas are mentioned in note of Table 2) was the product of th period of high economic growth in Japan (See Table 2). For example, the number of excess of in-migration (obtained by subtracting the number of out-migration from the number of in-migration) reached approximately 600,000 annually during the 5-year period of 1960 - 1964. However, this trend of excess of in-migration over out-migration shifted to undergo a sharp decline since 1965, and recorded 200,000 persons in 1972, dropping to a level one third less than that in the first half of the 1960s. In 1973, one year following the occurrence of the first oil crisis, the volume of excess of in-migrants decreased suddenly to 110,000, a level half that of the previous year. Additionally, unprecedented excess of out-migration over in-migration was observed between 1976 and 1980, with only the exception of the year of 1978.

Since 1981, this exceptional trend of excess of out-migration over in-migration turned to register a recovery of slight excess o£ Although this trend of excess of in-migration in-migration. is the level is still below 90,000 up to 1984. This is only continuing, one-fifth of the level of the latter half of the 1950s, a period before the high economic growth period during which excess of in-migration reached a figure of approximately 400,000. Despite the fact that increases in in-migration resulting from the slight recovery of economic activities are reflected in the migratory trend, a period of excess of in-migration at the level of 600,000, as seen in the first half of the 1960s, may not be expected to occur again in the future.

The migration pattern, in which the figure of excess of in-migrants obtained by subtracting the number of out-migrants from the 3 metropolitan areas from the number of in-migrants to the same 3 metropolitan areas, was quite large--in other words, a typical pattern of migration from rural areas to urban areas, would undergo a

substantial reduction. Although this eventually results in a balance between in-migration and out-migration in the metropolitan areas, it. cannot necessarily be interpreted as a considerable drop in the scale of both in-migration and out-migration. For example, the migratory trend shifted from excess of in-migrants to excess of out-migrants for a few years subsequent to 1976, with the total number of in-migrants and out-migrants amounting to roughly 1.70 million, which is almost identical to that recorded during the high economic growth period. It should be noted that even when the balance between in-migration and out-migration becomes zero, the number of migrants concentrated in the 3 metropolitan areas remains to be quite large and the social, economic and cultural significcance of the metropolitan areas is still great (See Figure 3).

Table 2 shows the excess of in-migrants or out-migrants of the 3 respective metropolitan areas.

(4) Characteristics and Changes in Migration Patterns of the Female Population

The migration pattern of the female population is different in characteristics in comparison to that of the male population. Firstly, the migration of married women is commonly to accompany their spouses, and, secondly, young single women tend to move to secure employment at closer locations than cases of males. Thirdly, regarding the work force demand structure of a particular region, industries requiring a large number of female employees are located.

Regional characteristics and changes are analyzed in the following. Fluctuations in the volume of in-migrants and out-migrants to and from the three metropolitan areas are shown in Figure 4. The number of male in-migrants to the three metropolitan areas is always greater than that of females, but, this difference in the number of male and female immigrants fluctuates significantly by period. Up to around 1964, the number of male in-migrants was at the level of 120 when the number of female in-migrants is taken as 100. However, thereafter it turned to show declines below the 120-level until around 1977. Since 1978, the sex ratio of migrants turned to record expansion, registering a high standard of 130 in 1982. This suggests that during the period of high the number of female migrants undergoes a relative economic growth, increase, even though the number of male migrants is still larger. Also, during the recent period of economic, stagnancy, the number of male migrants increases, and the number of female migrants decreases in opposite fashion.

However, it must be noted that there are regional differences in this migration pattern disparity by sex. For example, difference in the number of in-migrants by sex to the Tokyo Metropolitan area is considerably greater in comparison to those of the Hanshin and Chukyo Metropolitan areas. The selective tendency of male in-migrants to the Tokyo Metropolitan area has recently increased to record 140, while those to the Hanshin and Chukyo Metropolitan areas were 121 and 128, respectively. Furthermore, the sex ratio of the male in-migrants in in the Chukyo Metropolitan area was as low as approximately 100. 1975 suggesting that the number of male and female in-migrants was virtually the number of male in-migrants has been identical. Nevertheless. undergoing an increase in recent times, elevating the sex ratio to a level higher than that of the Hanshin Metropolitan area. This suggests the fact that the industrial structure of the Chukyo Metropolitan area undergoing certain types of change toward more male-oriented is structure.

Regarding out-migrants, the sex ratio is larger on the whole than situation of in-migrants. It seems that this phenomenon the is attributable to the following factors mentioned below. First of all, in-migrants continuously outnumbers female in-migrants. Secondly, male the male population exhibits a higher mobility than the female population. and. thirdly. female in-migrants and out-migrants are significantly related to marriage.

Additionally, the sex ratios of out-migrants also vary considerably The sex ratio of male out-migrants from the by region. Tokyo Metropolitan area is as high as from 130 to 150, while that from the Chukyo Metropolitan area remained at a low level up to 1967, or less The sex ratio of male out-migrants from the than 100. Hanshin Metropolitan area was higher than that of the Chukyo Metroplitan area. However, in recent years since around 1980, that of the Chukyo Metropolitan area exceeded the ratio observed in the Hanshin It should be pointed out in this way that sex Metropolitan area. differentials of migrants among the three metropolitan areas are becoming increasingly less significant.

Excess of in-migrants or out-migrants in the three metropolitan areas by sex are shown in Table 3. It should be noted that while males registered excess of out-migrants for 7 consecutive years from 1974 to 1980, the excess of female out-migration was observed only in a single year, i.e., 1980, which suggests that the female population is very likely to be much less mobile than male.

#### (5) So-called "U-turn" Migration

One remarkable characteristic of the migration pattern is return migration, which is presently referred to as U-turn migration. This is the pattern of people who have migrated to Metropolitan areas before and return to their hometowns. When in-migration to cities takes place, also a certain degree of out-migration from cities. there is However, postwar in-migration to metropolitan areas was so great in Japan that populations in the areas sending out migrants experienced drastic reduction, on the one hand, and populations in the metropolitan areas showed tremendous increase on the other, thus resulting in the over-crowded metropolitan areas and underpopulated local areas. Consequently, this U-turn migration from the overpopulated metropolitan areas to underpopulated rural areas is a desirable movement in terms of the redistribution of the national population.

It appears that such instances of U-turn migration have become conspicuous beginning from 1970, but direct statistics on nationwide U-turn migration are unavailable. Here, U-turn migration of the male population is estimated by age, as shown in Tables 4 and 5, based upon the population statistics by age and prefecture derived from the population census, compared with estimated population by age by applying probability of the population census. surviving When the male populations of 1975 and 1980 are compared, the populations of the 25 to 29 age group (with the exception of the Chukyo Metropolitan area where a slight increase was recorded), the 30 to 34 group and the 35 to 39 age bracket all declined in the 3 metropolittan areas of Tokyo, Hanshin and The declines were especially large in the Tokyo and Hanshin Chukyo. Metropolitan areas, registering 9.6% and 6.6%, respectively. This means that, for example, in the Tokyo Metropolitan area, the male population declined by 9.6% from the population obtained by subtracting declines attributable to mortality from the 25 to 29 age group, who were 20 to 24 years old in 1975. In other words, it can be deduced that a substantial percentage of the population have returned to the rural areas, and this is supported by the fact that the 25 to 29 age group underwent considerable expansion in rural areas. This suggests the fact that people, who migrated to the metropolitan area when they were around 20 years of age or at earlier age, returned to their hometowns by the time they had become 25 to 29 years old or 30 to 34 years old, exhibiting a modification in the traditional trend of dominant cityward migration.

#### 3. Migration and Development

The interrelationship between migration and economic development is now investigated from various perspectives.

First is the relationship of migration and educational standards, namely migratory trends by educational background. The effects of educational background as an independent variable can be clarified by comparing migrants and non-migrants. Based on the 1980 population census, graduates of institutions of higher learning (universities and colleges) accounted for 16.6% of the total number of migrants, while a percentage considerably they represented 9.8% of the non-migrant, lower than the case of migrants. On the other hand, graduates of primary schools only comprised 18.8% of the migrants, while they constituted as much as 30.6% of the non-migrants. Furthermore, when analyzing inter-prefectural migration, graduates of institutions of higher learning represented a very large percentage of 22.1% of the total, while graduates of primary schools amounted to only 13.1% of the migrants. (\*1) Even in 1970, ten years earlier, graduates of institutions of higher leaning constituted as much as 9.8% of all migrants, while the same group only represented 5.9% of the non-migrant group. However, this trend toward a greater number of people with higher educational achievements expanded even more in 1980. Such trends point to the fact that the percentage of the work force possessing higher learning degrees, who are considered to be highly contributive for regional development, would increase in areas which absorb migrants, and decrease in areas from where out-migration is heavy, thus resulting in regional disparity in terms of economic development.

When analyzing the population of the metropolitan areas, which are strongly affected by such migratory trends, in the case of taking the Tokyo Metropolitan area (Tokyo Metropolis and Kanagawa, Saitama and Chiba Prefectures), as an example, its population comprised only 24.5% of the national population in 1980, while 37.0% of the graduates of institutions of higher learning were concentrated in this metropolitan area. On the other hand, although the percentage of graduates of higher educatinal institutions accounted for as much as almost 40% (39.6%) of the population of the Tokyo Metropolitan area in 1970, the percentage dropped to 37.0% in 1980, exhibiting a decentralizing trend among highly educated people. (\*2)

Secondly, the age structure of migrants should be considered. As is generally recognized, migrants are highly concentrated in the category of young adults. Among the approximately 11.20 million people who migrated during the one-year period from October 1979 to September 1980, individuals (both male and femal) in the 15 - 34 age bracket amounted to 5.74 million, or 51.3% of the total. Even the 20 - 34 years old age group alone accounted for 42.1%. When analyzing migration rate by age, the 20 to 24 and 25 to 29 groups registered the highest percentages of roughly 20% for both males and females. (\*3) Needless to say, the above-mentioned fact of younger age groups accounting for the majority of migrants has a significant influence on economic development in both the urban and rural areas, which take in and send out migrants.

The third factor is related to the level of population quality among migrants. As previously mentioned, the fact that the educational standard of the migrants is higher than that of non-migrants means, in general, that migrants comprise a group of people with higher levels of quality. However, it is difficult to determine the level of quality only by educational background. It must be noted, for example, that migrants have a much more positive attitude toward their dietary life in comparison to non-migrants. (\*4) Regarding the selection of staple food, a declining number of migrants to urban areas consume rice during all three meals, while an increasing number of migrants have bread for breakfast, exhibiting a strong trend of diversification in dietary life. Needless to say, it is impossible to make assumptions on the basis of this fact alone that the health standards of the migrants are better than those of non-migrants. However, the trend shown by migrants of actively responding to new environmental changes is worthy of attention.

The fourth factor is related to the problems of urbanization. High population and industrial density in metropolitan areas has an adverse impact on the living, social and working environments of human beings. At the same time, migration not only resulted in overpopulation in some areas, but also, to the contrary, resulted in the phenomenon of underpopulation in other areas. Subsequently, consolidation of development system from the viewpoints of regional and human resource development is required, and such a system must result in regional balance as well, aiming at improved standards of quality of life.

Year	Total migrants <sup>1</sup> )	Migra- taion rate <sup>2</sup> )	Migration within prefectures		Migration Interprefectu	ıral
		1411	No. of migrants	Migra- tion rate	No. of migrants	Migra- tion rate
1051		4		<sup>8</sup>		8
1954	5,498,318	6,27	3,145,504	3,59	2,352,814	3.59
1955*	5,140,569	5.80	2,913,517	3,29	2,227,052	3.29
1950	4,859,625	5.43	2,/3/,844	3.06	2,121,781	3.06
1957	5,266,248	5.83	2,807,932	3.20	2,380,310	3.20
1950	5,294,291	5.01	2,913,005	3.20	2,380,620	3.20
1060+	5,357,650	5,02	2,915,025	3.1/	2,442,633	3.1/
1900*	5,652,659	6 43	2,972,940	3.20	2,0/9,/19	3.20
1901	0,012,494 6 500 100	6 05	3,000,105	3.21	2,952,309	3.21
1062	6,000,109	7 76	3,211,440	2.40	3,302,143 2 172 717	3,40
1905	7 256 701	7.20	3,404,004	2.02	3,412,141	3.02
1065#	7 280 627	7.51	3,022,409	2.72	2 602 222	3.73
1966	7,300,037	7.50	3,000,404	3.70 3.91	3,092,233	3,70
1967	7,431,000	7.55	3,747,302	3,01	3,003,090	3.01
1968	7 775 456	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	3 938 042	2.75	3 937 414	3.75
1969	8 125 600	7 97	4 010 024	2.03	4 115 576	3.03
1070*	8 272 511	8 02	4,010,024	2.93	4,115,570	3.93
1971	8 359 711	8 00	4,007,005	3 92	4 256 605	3.92
1972	8 349 840	7 88	4,103,100	3.06	4 156 854	3.96
1972	(8 416 246)	7.00	(4 222 160)	3.90	(4 194 086)	5.90
1973	8.538.820	7.87	4 304 482	3.97	4 234 338	3.97
1974	8,026,879	7.30	4 094 492	3.72	3,932,387	3.72
1975*	7,543,506	6.78	3.845.785	3.46	3.697.721	3.46
1976	7.391.627	6.57	3,826,506	3.40	3.565.121	3.40
1977	7,395,319	6.51	3,827,760	3.37	3,567,559	3.37
1978	7,291,505	6.37	3,804,066	3.32	3,487,439	3.32
1979	7,295,465	6.32	3,826,033	3.31	3,469,432	3.31
1980*	7,067,308	6.07	3,710,931	3.19	3,356,377	3.19
1981	6,901,752	5.89	3,583,552	3,06	3,318,200	3.06
1982	6,852,395	5,81	3,564,213	3.02	3,288.182	3.02
1983	6,674,373	5.62	3,478,247	2.93	3,196,126	2.93
1984	6,558,885	5.49	3,422,122	2.86	3,136,763	2.86

#### Table 1 Fluctuations in Total Migration and Intraand Inter- Prefectural Migration (1954 - 1984)

- Total migrants from 1954 to 1972, excluding migration in Okinawa Prefecture. The figures in parentheses include the migrants in Okinawa Prefecture from May 15 to December 31.
- 2) Migration rate is the percentage of migration to the Japanese population (estimates as of October 1 of each year. However, for years with the \* mark, rates were obtained based on results of the population census). The population of Okinawa Prefecture is excluded up to 1972.

Table 2 Excess of In-migrants or Out-migrants in the 3 Metropolitan Areas

Year	Tokyo Metro- politan Area	Chukyo Metro- politan Area	Hanshin Metro- politan Area	Total
1954	257,756	23,872	103,052	384,680
1955	234,658	23,067	95,108	352,833
1956	247,117	41,725	113,114	401,956
1957	294,637	44,017	168,541	507,195
1958	272,818	26,082	122,752	421,652
1959	300,883	44,621	145,360	490,864
1960	333,208	71,777	188,835	593,820
1961	359,237	74,612	220,849	654,698
1962	364,360	72,072	211,021	647,453
1963	354,349	81,302	184,543	620,194
1964	327,361	76,320	174,061	577,742
1965	297,582	52,364	130,659	480,605
1966	265,908	37,145	102,823	405,876
1967	255,107	41,577	107,224	403,908
1968	258,747	47,523	111,875	418,145
1969	249,951	54,784	120,964	425,699
1970	248,046	53,551	91,447	393,044
1971	205,500	36,543	45,857	287,900
1972	158,881	23,726	24,301	206,908
1973	96,985	22,063	Δ 4,924	114,124
1974	52,950	6,879	∆ 20,993	38,836
1975	44,513	Δ 3,782	Δ 30,159	10,572
1976	25,571	Δ 6,903	Δ 41,176	Δ 22,508
1977	35,368	∆ 298	∆ 44,517	∆ 9,447
1978	44,500	421	Δ 37,611	7,310
1979	29,583	∆ 2,752	∆ 41,460	Δ 14,629
1980	30,578	Δ 232	Δ 36,165	Δ 5,819
1981	52,712	1,746	∆ 23,776	30,682
1982	64,927	3,719	∆ 13,750	54,896
1983	82,889	4,330	∆ 4,559	82,660
1984	85,863	5,863	Δ 2,159	89,572

(Unit: Persons)

- Note 1) Tokyo Metropolitan Area includes Saitama, Chiba and Kanagawa Prefectures and Tokyo Metropolis, the Chukyo Metropolitan Area includes Gifu, Aichi and Mie prefectures and the Hanshin Metropolitan Area includes Kyoto, Osaka and Hyogo Prefectures.
  - 2) Migration between metropolitan areas is excluded.
  - 3)  $\Delta$  indicates a negative figure.
  - Figures since 1973 include migration to/from Okinawa Prefecture.
- Source: "Annual Report on Migration Derived from the Basic Resident Registers," Bureau of the Statistics, Office of the Prime Minister

Table 3 Fluctuations in Level of Excess of In-migration or Out-migration in the 3 Metropolitan Areas by Sex

(Unit:	Persons)
--------	----------

Year	Male				Female			
	Tokyo Metro- politan Area	Chukyo Metro- politan Area	Hanshin Metro- politan Area	Total	Tokyo Metro- politan Area	Chukyo Metro- politan Area	Hanshin Metro- politan Area	Total
1959	168,081	20,734	80,563	269,378	132,802	23,887	64,797	221,486
1960	188,691	36,910	109,907	335,508	144,517	34,867	78,928	258,312
1961	197,676	42,372	125,523	365,571	161,561	32,240	95,326	289,127
1962	193,943	39,676	116,103	349,722	170,417	32,396	94,918	297,731
1963	183,687	43,339	97,672	324,698	170,662	37,963	86,871	295,496
1964	166,361	40,121	89,653	296,135	161,000	36,199	84,408	281,607
1965	147,402	24,928	62,995	235,325	150,180	27,436	67,664	245,280
1966	127,702	18,196	48,522	194,420	138,206	18,949	54,301	211,456
1967	127,031	22,889	52,490	202,410	128,076	18,688	54,734	201,498
1968	131,385	25,218	54,258	210,861	127,362	22,305	57,617	207,284
1969	123,280	28,245	58,741	210,266	126,671	26,539	62,223	215,433
1970	121,401	28,048	41,810	191,259	126,645	25,503	49,637	201,785
1971	95,830	18,436	15,876	130,142	109,670	18,107	29,981	157,758
1972	69,414	10,536	4,740	84,690	89,467	13,190	19,561	122,218
1973	36,064	10,217	∆ 11,294	34,987	60,921	11,846	6,370	79,137
1974	15,195	2,945	∆ 18,507	∆ 367	37,755	3,934	Δ 2,486	39,203
1975	10,379	∆ 3,237	∆ 23,836	∆ 16,694	34,134	∆ 545	Δ 6,323	27,266
1976	125	∆ 5,794	∆ 29,427	∆ 35,096	25,446	∆ 1,109	∆ 11,749	12,588
1977	9,745	∆ 205	Δ 28,803	∆ 19,263	25,623	Δ 93	Δ 15,714	9,816
1978	18,681	297	∆ 24,501	∆ 5,523	25,819	124	∆ 13,110	12,833
1979	11,591	∆ 2,190	∆ 25,347	∆ 15,946	17,992	∆ 562	∆ 16,113	1,317
1980	15,563	∆ 59	∆ 21,131	∆ 5,627	15,015	∆ 173	∆ 15,034	∆ 192
1981	30,746	1,154	Δ 14,726	17,174	21,966	592	∆ 9,050	13,508
1982	38,349	2,585	Δ 7,871	33,063	26,510	1,127	Δ 5,948	21,689
1983	50,468	2,746	Δ 3,049	56,984	32,421	1,584	Δ 1,510	32,495
1984	51,137	3,410	∆ 1,104	53,443	34,726	2,458	Δ 1,055	36,129

Source: Same as previous table.  $\boldsymbol{\Delta}$  indicates a negative figure.

Table 4Fluctuations in Male Population of 3 MetropolitanAreas by Age

	(Unit: %)				
Age (as of 1980)	Tokyo Metro- politan Area	Hanshin Metro- politan Area	Chukyo Metro- politan Area		
15 - 19	14.9	3.8	2.7		
20 - 24	32.1	7.9	Δ 1.6		
25 - 29	Δ 9.6	Δ 6.6	3.5		
30 - 34	Δ 5.3	Δ 5.9	Δ 0.8		
35 - 39	Δ 2.3	Δ 4.1	Δ 0.1		
40 - 44	Δ 1.0	Δ 2.9	0.0		
45 - 49	0.0	Δ 1.7	0.2		
50 - 54	0.1	Δ 1.6	0.1		

Note) Based on population census statistics.  $\Delta$  indicates the rate of decline.

Table 5 Fluctuations in Male Population of the 25 - 29, 30 - 34 and 35 - 39 Age Groups in Local Regions

(Unit: %)

Rural area	A	ge in 1980	<u></u>
	25-29	30-34	35-39
Hokkaido	8.5	6.7	Δ 0.4
North Tohoku	18.2	9.8	1.5
South Tohoku	11.1	10.1	2.6
North Kanto	15.2	11.2	5.5
Hokuriku	15.0	8.1	0.7
Tosan	15.6	7.4	0.8
Higashi-kinki	9.5	11.5	6.2
Sanin	28.8	10.5	6.0
Sanyo	10.3	5.5	0.2
Shikoku	20.6	10.3	2.4
North Kyushu	7.8	9.5	1.8
South Kyushu	27.9	17.9	6.4
Okinawa	13.4	8.0	1.7

Note)  $\Delta$  indicates the rate of decline.



Figure 2 Number of Migrants for the 4 Migration Patterns Based on Inter-prefectural Migration Patterns



- 88 -



Figure 4 Trends in Sex Ratio (number of male migrants per 100 female migrants) of In-migrants and Out-migrants in the 3 Metropolitan Areas



#### Notes

- (\*1) "Kyoiku kara mita Nihon no Jinko" Showa 55 nen Kokusei Chosa Monograph Series No. 7. Somucho Tokei Kyoku, Showa 59 nen ("Population of Japan viewed from Education", 1980 Population Census Monograph Series No. 7, Bureau of Statistics, Prime Minister's Office, 1984)
- (\*2) "Nihon no Jinko", Showa 55 nen Kokusei Chosa Kaisetsu Series No. 1, Sorifu Tokei Kyoku, Showa 57 nen ("Population of Japan", Explanation Series No. 1, 1980 Census, Bureau of Statistics, Prime Minister's Office, 1982.
- (\*3) "Jinko Ido," Showa 55 nen Kokusei Chosa Monograph Series No. 2, Somucho, Tokei Kyoku, Showa 59 nen ("Internal Migration", 1980 Population Census Monograph Series No. 2, Bureau of Statistics, Prime Minister's Office, 1984.
- (\*4) Uchino, S., "Jinko Hendo to Shokuseikatsu" Daiichi Shuppan, Showa 51 nen ("Population Change and Dietary Life," Daiichi Shuppan Publishing Co., 1976). Uchino, S., Jinko Ido no Doko to Shoku Seikatsu Kozohendo, <u>Jinko Mondai Kenkyu</u>, No. 14, Showa 52 nen Shichigatsu (Migration Trends and Structural Change of Dietary Life, <u>Journal of Population Problems</u>, July 1977). Uchino, S., Jinko Ido no Shoku Seikatsu e no Eikyo -Bayesian- gata Cohort. Model Bunseki no Tekiyo, <u>Jinko Mondai Kenkyu</u>, No. 176, Showa 60 nen Jyugatsu (Multi-phase Responses of Dietary Behavior to Different Migration Patterns: An Appliciation of the Bayesian Model of Cohort Analysis, <u>Journal of Population Problems</u>, No. 176, October 1985).

# CHAPTER 5

# A COMPONENTS ANALYSIS OF URBANIZATION IN POSTWAR JAPAN

Tatsuya Itoh Research Demographer Institute of Population Problems Ministry of Health and Welfare

#### Introduction

The purpose of this study is to clarify the process of urbanization in postwar Japan by outlining the changes that have taken place in the distribution of urban and rural populations. The study also examines the direct and indirect effects of urbanization brought about by the massive concentration of population subsequent to the 1960s.

1. Population Urbanization and Its Factors

#### (1) Factors of Population Urbanization

Population urbanization refers to the phenomenon in which an increase in the proportion of a population living in urban areas" (\*1) and the growth rate of urban population exceeds that of the national Factors of urbanization are: (1) natural increase brought average. about the difference between the birth rate and mortality rate; (2)migration from rural to urban areas, (3) classification of municipality areas; and/or extension of urban areas; and (4) instances of the central part of a rural district being transformed into a "city" as a result of population increase. In addition, in an immigrant country such as the United States, the variance between the rate of international migration to urban areas and that to rural areas is also a variable affecting the urbanization of the population. Since the rate of net international migration is extremely low in Japan, this factor is excluded from the present study.

(2) What is an "Urban"?

Before observing the trends of population urbanization, it is necessary to examine the basis upon which data on "urban areas," or cities, are prepared. However, none of the attempts made so far have standard universal definition of a succeeded in providing а city. (\*2) This is because the definition and division of urban and rural areas in each country are based on historical, political, cultural, administrative and other considerations. The following three definitions are the most widely used in Japanese statistics on urban and rural areas.

The first definition of "urban area" regards a city as all shi-area in Japan. Nevertheless, this classification scheme has two problems: firstly is the problem of time series comparison in which an autonomous community organized as a town and village is transformed into a rural area and an urban area as a result of reorganization as a municipality; and secondly is the problem in which city areas, that have been expanded by annexation of towns and villages, are found to contain "rural areas" on its outer peripheries.

The second definition regards districts with high population density as a so-called "true urban area," In Japan, annexation of cities, towns, and villages, which started around 1930, progressed rapidly after 1953 when the "Town and Village Annexation Promotion Act" was enforced. As a result, the number of cities, towns, and villages reduced from 12,244 in 1920 to 10,500 in 1950, and by 1960 to only was 3,574, or about the same as the number today. Thus "rural" areas have come to be included in municipal areas as administrative areas. Thus, to obtain data on actual urban areas and those concerning actual rural it became necessary to again divide the annexated areas into areas. urban and rural areas based on data on small areas within city, town, and village administrative areas. In Japan, these actual urban areas are referred to as "Densely Inhabited Districts (D.I.D.)" (\*3). since it was not until after the 1960 census was taken that However, densely inhabited districts were established and various data concerning them tabulated and made public, information prior to that can only be assumed. (\*4)

third definition, the metropolitan Tn the areas and non-metropolitan areas are classified as either urban or rural areas based on data of prefectures. The urban population based on the first definitions accurates indicates the population of an urban area at two the time of each survey, but the extent of the urban and rural areas Population urbanization based on such a vary with each survey. definition is not only dependent on the variance between natural increases and migration between urban and rural areas but also on autonomous communities are changes in area divisions. Therefore, occasionally divided into urban and rural autonomous bodies based on regional units of information concerning other demographic aspects such as statistics on population migration. Since this method entails using autonomous bodies with broad boundaries, such as states and prefectures, as regional units. Consequently, non-metropolitan areas are included in areas regarded as shi-areas and conversely metropolitan areas are included in machi and mura-areas. Thus, the method fails to indicate an accurate between urban population and rural population. balance it is possible to observe detailed changes in the population However, urbanization "Metropolitan areas" are treated in Japan either as a prefectural unit or as a city, town, or village unit. Here, the data on the former are used. (\*5)

In short, population urbanization in Japan can be measured by three indexes. Data obtained by all three are used here based on the objective of analysis and availability of data.

#### 2. Trends in Population Urbanization in Japan

Figure 1 indicates the changes in population urbanization in Japan from 1920 to 1980. The figure indicates that, with the exception of the period of before and after World War II, population urbanization in Japan has advanced consistently since 1920. It advanced rapidly during the so-called high economic growth period, between 1955 and 1975, and has thereafter slowed down.

The proportion of population in city areas, which most vividly indicates population urbanization, increased by about 4.2-folds from 18.0% to 76.2% from 1920 to 1980. The proportion of population in city areas began to rise at the start of the 1930s, dropped during World War II, and again began to rise in and after 1950. During the next ten years, that is up to 1960, it rose 16% from 37.3% to 63.3%. During the next twenty years, the rise in the proportion of population in city-areas at 13% to 76.2% was somewhat lower than that of the 1950s. Next, changes in the so-called "true population urbanization" are examined by tracing the changes in the proportion of population in Densely Inhabited Districts (D.I.D.). Since the term as a regional unit was not adopted until the 1960 population census, the earlier numerical values are based on results estimated from statistics on the number of workers by industry. According to this result, the proportion of D.I.D.-areas, which amounted to 30% in 1920, indicated only a sluggish increase prior to the war, but rose by 31.5% over a 25-year period from 1955 to 1980, reaching 60% in 1980. It can therefore be said that population urbanization in Japan was pronounced in the postwar period, particularly in the past 25 years.

However, while not as fast as the proportion of city-areas or that of D.I.D.-areas, the proportion of the population in the three metropolitan areas increased continuously since 1920 from 36% to 50% over a 60-year period ending at 1980. However, the rate of increase of the population in the three metropoltan areas, similar to the case of urban districts, has been decelerating since 1975.

3. Components of Urbanization in Japan

#### (1) Population Urbanization Caused by Expanding Shi-areas

Population urbanization advances not only as a result of the variance between natural growth and migration from rural to urban areas, but also due to the areal reclassification. The effects of the expansion of city (shi) areas on the speed of urbanization are examined first. Because, since the term "Densely Inhabited District" was not used until the time of the 1960 population census, information prior to that year is extremely limited.

As shown in Table 1, at the time of the 1950 census the population of city areas amounted to 31.2 million, or 37.5% of the total population. By the next census in 1955, the population of city areas increased to 50.3 million, or 56.3% of the total population. The proportion of the city population increased by 18.8% within a period of five years. In the census report, it is tabulated the population of city areas as of the five years prior to the census according to the boundaries at the time of census. The results are given in the right portion of Table 1. Accordingly, the 1955 population census residing within city areas was 44.7 million as of 1950. In short, from 1950 to 1955, the population of city-areas increased by 19.1 million or from 31.2 million to 50.3 million, of which the population within city limits increased by only 5.6 million from 44.7 million to 50.3 as of 1955 The remainder of the amount of increase of 13.5 million million. was due to the expansion of city areas resulting from the large-scale annexation of cities, towns, and villages. Stated differently, of the 18.8% increase in the proportion of the population of city-areas over a five-year period, 16.2% was caused by expanding city limits while only 2.6% was the result of natural increase within city limits and more people migrating from rural to urban areas than the opposite direction. This means that 85.9% of population urbanization was the result expanding city limits.

dividing the causal factors of population Subsequently, urbanization of the subsequent periods into those related to expanding city limits and those related to population increase within municipal it can be seen that the former accounted for areas (Table 2), approximately one-half of the proportion of increase of the population In other words, the only period when the expansion of of city-areas. city limits did not contribute to 50% of the total was the 10-year period of the 1960s; in all other periods, the percentage contributions ranged from 52% to 68%.

(2) Natural Increase and Social Increase as Factors of Urbanization

Approximately one-half of the expanded proportion of the urban represents a common indicator of population population, which was because of reclassification of urbanization, administrative The alterations were not only physical ones but also boundaries. represent the actual developmental transformation of rural areas into secondary cities. suburbs belonging to metropolises or into despite the fact that natural and social increases are Nevertheless, also important factors of population urbanization, due to insufficient data, it is not yet possible to conduct an analysis which considers rural districts and D.I.D.s as regional units. districts, urban Therefore, an analysis of the correlation between natural increases and social increases as a causal variable of population urbanization can only be approached by dividing prefectures into metropolitan areas and non-metropolitan areas as regional units.

Table 3 summarizes the 25-year period from 1955 to 1980, during which population urbanization advanced rapidly. This table shows the population increases for each respective five-year period; natural increases for every five years obtained from vital statistics; excessive number of people moving between metropolitan areas and non-metropolitan areas (social increase) obtained from the Annual Migration Statistics based on the Basic Register of Inhabitants; and international migration and statistical errors treated as a difference between these two areas.

According to this table, from 1955 to 1965 virtually identical increases in population were observed in the metropolitan areas as was the case in the nationwide population of Japan. This was caused by individuals from non-metropolitan areas moving into metropolitan areas, whose numbers exceeded the natural increases of non-metropolitan areas During the period concerned, the population declined in non-metropolitan areas despite the fact that natural increases in these areas were about the same as those in the metropolitan areas. This occurred because the flow of the population of non-metropolitan areas into metropolitan areas exceeded their natural increases.

However, with the 1965-1970 period as a turning point, the balance between natural and social increases changed significantly. With the advent of the 1970s, migration from non-metropolitan areas to metropolitan areas gradually declined, and from 1975 to 1980, contrary to past migration patterns, more people actually moved from metropolitan areas to non-metropolitan areas than in the reverse direction. the population increase in the metropolitan areas since Subsequently, 1970 was not the result of social increases but that of natural which had begun to exceed the population increase in increases, non-metropolitan areas, thus sharply decelerating the speed of population urbanization. Moreover, the population outflow from metropolitan areas observed since 1975 also contributed to the deceleration of population urbanization.

In short, a brief look at the 25-year period during which population urbanization advanced rapidly reveals that 64.2% of this advancement was due to a natural increase, twice as much as the contribution of social increase, in addition to the fact that the population inflow from non-metropolitan areas was a phenomenon limited only to the 15-year period between 1955 to 1970.

(3) Analysis of the Indirect Effect of Migration

It has been noted that the population of metropolitan areas increased by 23.1 million from 1955 to 1980, two-thirds of which were due to natural increases within regional boundaries. However, most of the people who migrated from non-metropolitan areas to metropolitan areas were either young, recent graduates who had just found employment or those who had entered college or university. A few or ten or so years later, these people eventually married in the metropolitan areas and began raising their own families. Moreover, since the age composition of these individuals newly established in the metropolitan areas was younger than the others lived in both metropolitan areas and non-metropolitan areas, their mortality rate is assumed to have been very low. Therefore, the natural increase rate of people who had moved into metropolitan areas from non-metropolitan areas is believed to have been significantly larger than that of people who had previously been residing in metropolitan areas.

An analysis was conducted on the indirect effects of the so-called social increase such as the degree of the natural increase brought about by the social increase over a 15-year period from 1955 to 1970, and the proportion of natural increase in the metropolitan areas caused by people moving into those areas from non-metropolitan areas. To carry out this analysis, a method of calculating was adopted by assigning 0 to the level of migration between metropolitan and non-metropolitan areas after a certain predetermined year, with the census survival rate by age for the country as a whole as well as the birth rate by age. The results are presented in Figure 2.

the population of metropolitan areas According to Figure 2, increased by 23.1 million over a period of 25 years from 35.1 million in 1955 to 58.2 million in 1980. However, even if the migration between non-metropolitan areas subsequent to 1955 was set at 0, it would mean that the population of metropolitan areas had increased by 10.9 million as of 1980 from 35.1 million to 46.0 million. This increase is caused the natural increase in the number of people previously residing in by metropolitan areas in 1955. Moreover, since the population in 1980 was computed to be 49.8 million and assuming zero migration since 1960, the difference of 3.82 million (obtained by substracting 46.0 million from 49.8 million) can be regarded as population increase brought about by migration from 1955 to 1960 and the natural increase among people moving into metropolitan areas. However, since Table 3 indicates that the social increase in metropolitan areas from 1955 to 1960 was 2.4 million, the natural increase brought about by people moving into metropolitan areas was approximately 1.5 million.

By performing such calculations in succession, it is possible to separate the direct effect to population increase caused by the migration in each period and the indirect effect resulting from people moving into metropolitan areas. The population increase during the 25 years between 1955 and 1980 is summarized below;

	(distribution percentage)	
a.	Population increase from 1955 to 1980	
	58.2 million - 34.1 million = 23.1 million	100.0
b.	Natural increase from 1955 population	
	46.0 million - 35.1 million = 10.9 million	47.1
c.	Total of social increase and indirect effect	
	58.2 million - 46.0 million = 12.2 million	42.9
d. Natural increase since 1955 (Table 3)

### e. Natural increase brought about by people migrating to metropolitan areas (d-c), that is, indirect effect of social increase

2.6 million 11.3

In short, as shown in Table 3, according to the census, vital statistics. migration statistics and other sources, 64.2% of the population increase in metropolitan areas is due to natural increase, with the remaining 34.8% caused by social increase. However, of the 64.2% in natural increase noted above, 11.3% results from people moving into metropolitan areas after 1955. Then migration into metropolitan areas contributed to 52.9% of the population increase in the metropolitan areas.

4. Conclusion

In the foregoing discussion, it was noted that population urbanization in Japan progressed in a consistent manner since 1920, the pace becoming especially rapid from 1955 to 1975, and slowing down considerably after 1975. Factor analyses were carried out to clarify the trends observed subsequent to 1950, when the progress of population urbanization was particularly fast.

As a result of analyses, it was clarified that about half of the increase in the proportion of urban population, the most frequently used indicator of population urbanization, was attributable to the expansion of city limits. This was particularly the case in the second half of the 1950s. A similar trend of increase, albeit not as rapid, was also found in the proportion of the population in metropolitan areas of Tokyo, Osaka, and Nagoya. Looking at the population increase of metropolitan areas by separating the natural and social increases, it can be seen that the bulk of migratin from non-metropolitan areas to metropolitan areas occurred during the 15 years between 1955 to 1970, accounting for 35.8% of the population increase in metropolitan areas since 1955. Subsequently, as far as these data indicate, it can be said that the population increase in metropolitan areas was mainly due to natural increases. However, since the age composition of people migrating from non-metropolitan areas is relatively young, their subsequent rate of natural increase is assumed to be high. Therefore, the rate of natural growth among individuals migrating from non-metropolitan areas was measured using the cohort survival rate method. As a result, the natural increase among this category of people, who accounted for 35.8% of the population increase in metropolitan areas, was estimated to account for 11.3% of the population increase from 1955 to 1980. Thus, it was concluded that migration to metropolitan areas accounted for more than half or 52.9%, of the population urbanization taking place during the period concerned.

However, as noted elsewhere, since there are hardly any young people in non-metropolitan areas who can move into other areas during their lifetime, it is highly unlikely that the concentration of the population as a prefectural unit will advance more than what it is at the present. (\*6)

.

	Population w tim	ithin city areas at e of survey	Population within city areas as of 5 years later		
Year	Population	Proportion of	Population	Proportion of	
	(1000)	(%)	(1000)	(%)	
1950*	31,203	37.5	44,660	53.7	
1955*	50,288	56.3	54,254	60.8	
1960*	59,333	63,5	60,895	65.2	
1965*	66,919	68.1	68,863	70.1	
1970*	74,853	72.2	77,533	74.8	
1970	75,729	72.1	78,166	74.7	
1975	84,967	75.9	85,133	76.1	
1980	89,187	76.2	-	,	

### Table 1 Population Within City Limits at Time of Census and 5 Year Later

\* Excludes the population of Okinawa-ken.

Table 2	Factors of Population Urbanization:
	Effect of Annexation of City, Town and Village:

	Rise in pro-	Caused by ex-	Natural &	Percentage distribution (%)		
Year	portion or urban popu- lation for 5 years	pansion of city areas for 5 years	social in- crease with- in city limits for 5 years	Expansion of city limits	Natural & social increase	
1950-55*	18.8	16.2	2.6	85.9	14.1	
1955-60*	7.2	4.4	2.8	61.8	38.2	
1960-65*	4.6	1.7	2.9	36.5	63.5	
1965-70*	4.1	2.0	2.1	48.5	51.5	
1970-75	3.8	2.6	1.2	68.2	31.8	
1975-80	0.3	0.2	0.1	52.1	47.9	

\* Okinawa excluded.

Term	Region	Population increase	Natural increase	Social increase	International migration and statistical error
1955- Jap Met ar Non ta	60 an ropolitan ea -metropoli n area	4225 4267 (100.0) -42	4762 1876 (43.9) 2886	0 2355 (55.1) -2355	-537 37 (0.8) -574
1960- Jap Met ar Non ta	65 an ropolitan ea -metropoli n area	4908 5658 (100.0) 750	5022 2645 (46.7) 2377	0 3009 (53.1) -3009	-114 4 (0.0) -118
1965- Jap Met are Non ta	70 an ropolitan a -metropoli n area	5455 5417 (100.0) - 38	5678 3408 (62.9) 2270	0 2069 (38.1) -2069	-222 -61 (-1.1) -161
1970- Jap Met ar Non ta	75 an ropolitan ea -metropoli n area	7272 5031 (100.0) - 2241	6678 4005 (79.6) 2673	0 754 (14.9) - 754	594 272 (5.4) 322
1975- Jap Met ar Non ta	80 pan ropolitan ea -metropoli n area	5121 2696 (100.0) 2425	5143 2871 (106.4) 2272	0 - 42 (-1.5) 42	-22 -133 (-4.9) 111
1955- Jap Met ar Non ta	80 oan ropolitan rea i-metropoli in area	26981 23069 (100.0) - 3912	27283 14805 (64.2) 12478	0 8145 (35.3) -8145	-302 119 (0.5) -421

# Table 3 Population Increase by Factor in Metropolitan and Non-metropolitan Areas, 1955-1980



Figure 1 Population Urbanization in Japan: 1920-1980

Notes

- (\*1) Wilson, Christopher, "urbanization", Christopher Wilson (ed.), <u>Roland Pressat</u>, <u>The Dictionary of Demography</u>, Oxford: Basil Blackwell Ltd., 1985, p.225.
  - (\*2) For example, see United Nations, Demographic Yearbook 1983, vol.33.
  - (\*3) Statistics Bureau, Prime Minister's Office, the 1960 Census: Japan's Densely Inhabited Districts, 1962.
  - (\*4) Atsushi Ohtomo, <u>Distribution of Urban Population in Japan</u>, Taimeido, 1979. Especially, pp. 83-110.
  - (\*5) Ibidem
  - (\*6) Fujio Yamaguchi, "Patterns of Migration", in Tatsuya Itoh, Hiroo Naito and Fujio Yamaguchi, eds., <u>Regional Structure of Population</u> <u>Flow</u>, (Japan's Regional Structure 5) Taimeido, 1979, pp. 273-285 and Tatsuya Itoh, "Trends in Postwar Migration by Types of Families and Changes in Age Structure," Jornal of Population Problems, 1984, pp.24-38.

## CHAPTER 6

## OVERPOPULATION AND DEPOPULATION: PROBLEM OF DEVELOPMENT

Hiroaki Shimizu

Chief Migration Section, Migration Division Institute of Population Problems Ministry of Health and Welfare

#### Introduction

The "high-economic growth policy" launched in the mid-1950s had profound effects on the natural and social changes of the Japanese population (\*1). Overpopulation and depopulation are the most representative of these demographic changes.

An examination of these two problems in terms of demography indicates that it is now possible to formulate a new research framework for regional population changes, which involves identifying changes in crude birth and death rates, and age structure of a particular country in relation to its migration patterns, as well as to present a descriptive analysis of population movements in overpopulated and depopulated regions (\*2). Moreover, an examination of the various studies conducted since the mid-1950s indicate that "the most recent trend seems to be in the direction of population redistribution occurring on the Japanese archipelago, that is to say, Japan's population is beginning to concentrate not only in metropolitan areas, as has been the case thus far, but in regional centers as well (\*3), thus giving rise to the so-called regional economic spheres." (\*4) In other words "in the mid-1950s, overpopulation and depopulation advanced at an incredibly rapid pace on the Japanese archipelago as a whole, but at the present overpopulation and depopulation are being observed within These studies, however, were conducted by the various regions." (\*5) night population (residents). In this paper, the research findings noted above will be used as the introduction to clarify the present state of overpopulation and depopulation as well as the problems o£ given development with sufficient consideration to the day population. (\*6) The day population must be considered because studies limited to only the de jure population show only a partial picture of migratory movements in present-day Japan, where there is a considerable number of people who commute to work and school located in metropolitan areas. Moreover, researchers in the present study are apprehensive about analyzing the state of overpopulation and depopulation as well as the problem of development based only on the de jure population because such limitations may not necessarily lead to what Kunio Yanagida has referred to as "the happiness of every citizen."

#### 1. Conceptualization of Overpopulation and Depopulation

Overpopulation and depopulation, or the problems of overpopulation conceptualized and depopulation, have been in various ways. a report compiled by the Regional Sectional Subcommittee Nevertheless, Deliberation Council states: "Concentration of of the Economic population around urban centers, especially the rapid urbanization of has combined with increased economic activities metropolitan areas, within urban areas, improved the levels of consumption, and stimulated

the modernization of the people's life style to increase demand for more urban facilities. However, urban facilities are unable to keep up with the pace of the concentration of the population, thus seriously hampering urban functions as evidenced by insufficient housing, water supply and drainage, and other components of the living environment, as well as by various obstacles to urban living, including traffic congestion, increasing traffic accidents, and overcrowded commuter trains for work and school." (\*7) Such "large movements of people toward urban areas are posing various problems for areas experiencing reductions in population. If the problem of declining population is referred to as "the problem of depopulation" in the same light as the "problem of overpopulation" and is understood as the condition in which it is difficult to maintain a certain level of the standard of living because of an insufficient population size, as in cases where it is difficult to maintain the basic conditions related to community life, such as fire prevention, education, and sanitation, and it subsequently becomes difficult to make use of natural resources in a rational manner, causing the regions productivity to deteriorate significantly, the problem of depopulation would appear in areas where, as a result of decreased population, population density declines, the population becomes top-heavy (increasing number of the aged), and the traditional life pattern becomes increasingly difficulty to maintain. (\*8)

According to this definition, overpopulation and depopulation, or the problems of overpopulation and depopulation, occur when, as a result of the concentration of population around urban areas and decreased population in rural areas, a situation develops where it becomes difficult to maintain normal community life. However, the creation of a certain type of operational concept is probably imperative in analyzing the problems of overpopulation and depopulation, or those of overpopulated and depopulated areas, in a manner appropriate to the discipline of demography.

#### 2. Demography of Overpopulation and Depopulation

What kinds of research have demographers conducted regarding overpopulation and depopulation? For instance, Professor Toshio Kuroda summarizes his views in the following manner:

Overpopulation and depopulation, touched off by migrating populations, may follow a vicious circle in which the age structure changes as a result of the accumulation and acceleration of population movements, and the tendency toward overpopulation and depopulation is further accelerated through reverse trends in population dynamics. The vicious circle of overpopulation and depopulation set off by migration may be represented as follows:

	$\begin{array}{c} \text{Overpopulation} \\ \text{(inflow)} \end{array} \rightarrow$	Young age structure	$ \xrightarrow{\text{High natural}} \xrightarrow{\text{Over-}} growth rate \xrightarrow{\text{oppulation}} population $	n
Migration —			(reversal of population dynamics)	
	$\begin{array}{c} \text{Depopulation} \\ (\text{outflow}) \end{array} $	Old age structure	$\rightarrow$ Low natural $\rightarrow$ De- growth rate populatio	n

The dynamic process of overpopulation and depopulation set in motion by migration as shown above must be examined by comprehensively analyzing the changes in the following three demographic orders and their interrelationship:

- (1) Spatial distribution order of human settlement (horizontal order)
- (2) Regional population age structure order (vertical order)
- (3) Regional population reproduction order (population dynamics order) (\*9)

In short, Professor Kuroda has clarified the mechanism of migration in overpopulated and depopulated areas, in addition to proposing a framework for conducting research.

Demographic and developmental problems regarding overpopulation and depopulation based on concrete cases are treated below by keeping in mind the mechanism of regional population trends noted above and the new dimension concerning the problems of overpopulation and depopulation presented by Yoichi Okazaki.

3. Overpopulation and Depopulation in Metropolitan and Local Areas

Based on the above indication that overpopulation and depopulation have entered a new phase, here an examination is carried out to get a glimpse of the population trends in overpopulated and depopulated areas in metropolitan areas and those in regional areas. Tokyo Metropolis is used as an example of a metropolitan area and Miyazaki Prefecture as a case in which the population began to increase from the second half of the mid-1960s.

First, with regard to Tokyo Metropolis, areas where the population continued to increase after the mid-1950s were regarded as "overpopulated areas," and the ward showing the largest increase in the 1975 - 1980 period was selected from among the 23 wards comprising Tokyo and the district showing the largest increase was selected Metropolis from the Santama area. On the other hand, areas where the population continued to decline after 1955 were regarded as "depopulated areas," and the ward showing the largest rate of decline in the 1975 - 1980 period was selected from among the 23 wards and the district showing the highest rate of decline was selected from the Santama area. With reqard to Miyazaki Prefecture, areas where the population has increased since

1965 were considered "overpopulated areas" and one district was selected from the urban area and one from the rural area using the same criteria as those adopted for Tokyo Metropolis. However, with regard to "depopulated areas," two districts were selected from the rural area but none from the urban area since there was no appropriate urban area to choose from.

On the basis of the "overpopulation and depopulation" conditions in the cities, wards, towns, and villages selected in accordance with the method just described, specific aspects of the population movement in "overpopulated or depopulated districts" of the metropolitan areas and those of local areas are clarified in the below.

(1) General Trend in "Overpopulation and Depopulation" in Metropolitan and Local Areas

When observing the changes in the proportion of the number of cities, wards, towns, and villages whose populations increased since 1965 when the trend toward overpopulation and depopulation entered a new phase, it can be seen that while the said number has been increasing annually throughout the nation, an overwhelming number of cities, wards, towns, and villages in Tokyo Metropolis experienced an increase in their population in the 1960 - 1970 period. However, the number of such cities, wards, towns, and villages has since decreased. By contrast, less than 20 percent of cities, wards, towns, and villages in Miyazaki Prefecture saw their populations grow in the same period. Nevertheless, the figure has increased consistently since then, approaching the level recorded in Tokyo Metropolis in the 1975 - 1980 period (see Table 1).

With these general trends in mind, demographic changes in the "overpopulated areas" and "depopulated areas" in Tokyo Metropolis and Miyazaki Prefecture are examined here using the selected area.

(2) Overpopulation and Depopulation in Metropolitan Area -- Case Study of Tokyo Metropolis --

For Tokyo metropolis, Edogawa Ward and Tama City were selected as "overpopulated areas," while Chiyoda Ward ad Okutama Town were selected as "depopulated areas."

With Professor Kuroda's formulation of population movements as a clue, the "overpopulated areas" are considered first.

In the case of Edogawa Ward, the population increase was particularly high from 1955 to 1960, with the rate of increase declining since. However, when looking at the situation in the 1975 - 1980 period, it is evident that the rate of population increase in Edogawa Ward was higher than the average for Tokyo Metropolis. Reflecting this situation, while natural lincrease rate was about 20 per 1,000 population in 1971, the said rate has shown a declining tendency since then, dropping to about 9 per 1,000 population in 1980. But this rate is higher than average recorded in both Tokyo Metropolis and the nation as a whole (see Table 2 and Figure 1).

Next, a look at the advancement in the aging of Japan's population reveals that, while on the rise, it was only 6.1 percent even as late as 1980. Therefore, following the definition that places a population at the start of the aging phase when its aged population reaches 7 percent, it must be concluded that Japan's population has not yet reached the aging phase. Furthermore, viewing the situation of Japanese households, it can be seen that since only about half of the aged population live in "aged nuclear family households" ("aged nuclear family households" + "aged single households"), the proportion of elderly people living in "nuclear family households" in the country as a whole is lower than the average in Tokyo Metropolis (see Figures 2 and 3).

When viewing the de jure population in relation to the day population in Edogawa Ward, it can be seen that, since the day population is less than 100, during the day, Edogawa residents who commute to work or school in other areas (hereinafter referred to as temporary outbound transferees) outnumber residents from other areas who commute to work or school in Edogawa (hereinafter referred to as temporary inbound transferees). In terms of the age structure, it is noted that, with regard to the population from 0 to 14 and that from 55 to 64, the distribution percentage of the day population is higher than that of the de jure population. But there is almost no difference in the distribution percentage among those from 25 to 54, the so-called "youth and prime of life population" (see Table 3 and Figure 2).

In the case of Tama City, the population increased sharply from 1960 to 1975 as a result of the development of Tama New Town and population growth rate continued at more than 50 percent even in the 1975 - 1980 period. This was reflected in the high of natural increase rate recorded from 1972 to 1977 as well as in the years since then (see Table 2 and Figure 1).

When investigating the progress in the aging of Tama Town's population with these circumstances in mind, it can be seen that while it approached the national proportion in the 1955 - 1960 period, the proportion of elderly people has declined somewhat in subsequent years. Nevertheless, up to 1970, the proportion of elderly people in Tama City remained above that recorded in Edogawa Ward. But the Tama population has again become rejuvenated since 1975, so that it is younger at the present than the population of Edogawa. Moreover, a look at household composition reveals that about 50 percent of the aged population of Tama Town live in "aged nuclear family households." Therefore, the household composition of elderly people in Tama Town is almost identical to that in Edogawa Ward (see Figures 2 and 3).

When considering the relationship between the de jure population and day population. it can be seen that the proportion of the day population is lower in Tama City than in Edogawa Ward. In terms of it is clear that while those up to 24, the so-called structure, "juvenile population," accounted for about 50 percent of the day those between 25 to 54, the so-called "youth and prime of population, life population," accounted for a somewhat smaller percentage. This is probably because a large proportion of those making up the "youth and prime of life population" are temporary outbound transferees (see Table 3 and Figure 2).

In the case of Chiyoda "Depopulated areas" are examined next. the rate of population decline was especially pronounced in the Ward. 1960 - 1965 and 1965 - 1970 periods. However, while the rate of population decline decelerated up to the mid-1970s, it once again rose in the 1975 - 1980 period -- and still continues to do so. The phenomenon of decreasing population was reflected in natural increase rate; while natural increase rate was about 7 per 1,000 population in it declined to the 2 per 1,000 population level in the mid-1970 1970. and eventually recorded minus rate of natural increase in 1980 (see Table 2 and Figure 1).

This situation was also reflected in the aging of the population. The proportion of the aged population in Chiyoda Ward, which was below the national average up until 1965, has exceeded the national average since 1970, reaching 13.2 percent in 1980. Furthermore, a glance at the situation of aged households reveals that about 61 percent of the elderly were living in "aged nuclear family households." Subsequently, Chiyoda Ward can be regarded as an area where an increasing number of the elderly are living within nuclear families (see Figures 2 and 3).

In Chiyoda Ward, even to this day, the day population has continued to be considerably larger than its de jure population. When looking at Chiyoda Ward's population in terms of its age structure, it can be seen that, reflecting the fact that temporary inbound transferees greatly outnumber temporary outbound transferees, those in the "youth and prime of life population" account for an overwhelming proportion of the ward's day population. Therefore, the marked difference between the age structure of the de jure population and that of the day population, particularly the proportion of the aged population, should be noted (see Table 3 and Figure 2).

Okutama Town is examined here. The population of Okutama Town decreased by more than 10 percent in the 1955 - 1960 period, but this rate of decrease has eased since then. However, the rate of decrease rose again in the 1975 - 1980 period. The population of Okutama Town has thus decreased at about the same rate as that of Chiyoda Ward. As a result, although at a low level, the natural increase rate had tended to increase up to around 1972; but since 1973, it has dipped to below 2 per 1,000 population and thereabouts for the most part, with the highest rate being around 3 per 1,000 population. Since 1978, the population of Okutama Town has in fact registered minus rate of natural increase (see Table 2 and Figure 1).

These trends have been reflected in the age structure of the population Okutama Town as well. The proportion of the aged population in Okutama remained near the national level up to 1965, but has exceeded it since then. As of 1980, the aged population in Okutama was very similar to that observed in Chiyoda Ward. The proportion of the elderly living in nuclear families has not progressed to the same degree as in Chiyoda Ward, as evidenced by the fact that less than 40 percent of the elderly live in "aged nuclear family households" (see Figure 2 and 3).

Furthermore, the relationship between the de jure population and day population in Okutama Town is similar to that observed in Edogawa Ward, with the former being larger than the latter. Looking at this in terms of age structure, it can be seen that the day population is larger than the de jure population when the 55 - 64 age cohort, the so-called "pre-old age population," and the old-age population are considered. This is particularly the case if the analysis is based on the distribution percentage of the population of Okutama Town (see Table 3 and Figure 2).

(3) Overpopulation and Depopulation in Local Areas
-- Case Study of Miyazaki Prefecture --

The population of Miyazaki City, an "overpopulated area," has shown an increasing tendency since 1955, with the population growth rate exceeding 15 percent since 1970. As a result, the natural increase rate over the past ten years has remained at a relatively high 13 - 15percent (see Table 2 and Figure 1).

However, since the rate of population growth in the mid-1950s and that in the mid-1960s were considerably lower than those in Edogawa Ward, despite the advancement in the aging of its population, the proportion of the aged was below the national average even in 1980, or about the same as the average for Tokyo Metropolis. The proportion of the elderly living in "aged nuclear family households" in Miyazaki City exceeded that recorded in Edogawa Ward (see Figure 2 and 3).

Moreover, the day population is larger than the de jure population, but since the difference is not nearly as great as the case in Chiyoda Ward, there is hardly any difference in the age structure of the de jure population and that of the day population (see Table 3 and Figure 2).

Kiyotake Town is taken up here. The population of this town decreased from 1955 up to 1965, but it began to increase in the 1965 -1970 period, increasing sharply in 1970. Particularly noteworthy is the fact that the population growth rate was particularly pronounced in the 1975 - 1980 period. These circumstances were also refleced in the natural increase rate, but the influence of the population inflow in the mid-1970s has not yet begun to manifest itself (see Table 2 and Figure 1).

When treating the relationship between these demographic trends and the aging of the population, it can be argued that, since the proportion of the elderly in Kiyotake Town has been below the national level since 1955, population growth has not necessarily been due to increases in the number of youths. Moreover, those living in "aged nuclear family households" account for about 43 percent of the population in Kiyotake Town (see Figure 2 and 3).

Furthermore, the day population has increased annually, and it is now very close to the level of the de jure population. They both have almost idenical age structures (see Table 3 and Figure 2).

The population of Nishimera Village declined sharply between 1960 and 1965 and between 1970 and 1975, and dropped by more than 10 percent even between 1975 and 1980. It can thus be said that the population of Nihimera Village has decreased even more sharply than has the population of Chiyoda Ward. Consequently, the natural increase rate has also remained low, and since 1976, the population has in fact continued to register a negative figure (see Table 2 and Figure 1).

The ratio of the aged population, which was low in 1955, began to rise sharply since then, exceeding 11 percent in 1975 and 13.6 percent in 1980. It should also be noted that more than 70 percent of the elderly are now living in "aged nuclear family households" (see Figures 2 and 3).

Finally, the population of Kitagoh Village is examined.

The rate of population decrease peaked in the period 1960 - 1965and stopped increasing since then, dropping to about 6 percent in the 1975 - 1980 period. However, since the population decreased by 10 to 18 percent during the twenty-year period from 1955 to 1975, the natural increase rate has remained at a low level, even registering minus rate in 1973. Since 1979, the natural increase rate has recovered somewhat, indicating a 1 - 2 per 1,000 population (see Table 2 and Figure 1).

This condition is having an effect on the aging of the population, as evidenced by the fact that the rate of the aged population exceeded the 10 percent mark in 1965 and reached 17.0 percent by 1980. These figures more or less correspond to the conditions in year 2005 predicted by the Ministory of Health and Welfare based on the future (average) estimates announced by the Institute of Population Problems in 1981. Furthermore, 32 percent of the elderly are living in "aged nuclear family households" (see Figure 2 and 3). Although the percentage of the day population has declined vis-a-vis the de jure population, compared with "depopulated areas" in Tokyo Metropolis, it has approached the level of the de jure population. A look at the age structure reveals that there is virtually no difference between the de jure population and the day population (see Figure 2).

Conclusions Regarding Overpopulation and Depopulation and Problems of Development

The above discussion attempted to describe and analyze the demographic changes in "overpopulated areas" and "depopulated areas" and the household composition of the aged with samples drawn from cities, districts, towns, and villages in Tokyo Metropolis and those in Miyazaki Prefecture.

However, the discussion also examined the correlation between de jure population and day pouplation. As a result, it was discovered that a situation where temporary inbound transferees outnumber temporary outbound transferees and vice a versa is observed in both "overpopulated areas" and "depopulated areas." When temporary inbound transferees outnumber temporary outbound transferees, aging of the day population tends to be reversed, and when the opposite is the case, aging tends to accelerate. Moreover, it was discovered that a significant difference between the number of temporary inbound transferees and that of temporary outbound transferees results in a significant difference between the age composition of the de jure population and that of the day population, particularly with respect to the proportion of the aged population. Therefore, focusing the discussion on the emposition of the population, it can be seen that the relationship between de jure and day population is greatly related to the reversal and acceleration of population aging during the day and night, so that the appearance during the day and that at night is completely different, as is observed in Chiyoda Ward.

The above results indicate the need to deal with the problem of development in "overpopulated areas" and that in "depopulated areas" by adopting development measures based not only on the de jure population but also on the day population.

Moreover, a consideration of these demographic changes suggests a need for charts and chapters incorporating statistics clarifying the household composition of various areas even during the day.

At any rate, if researchers, administrators, and politicians concerned with the problem of population development exert their ingenuity in grasping the actual demographic conditions of Japan and strive to put their ideas into practice, efforts to formulate development policies that aim at realizing what Yanagida referred to as the "happiness of every citizen" would not be in vain.

Table	1	Trends of the Proportion of Cities, Wards, Towns,
		and Villages with Increasing Population

Area	Proportion of cities, wards, towns, and villages with increasing population (%)					
	1965-1970	1970-1975	1975-1980			
Nationwide	28.7	43.8	53.6			
Tokyo Metropolis	71.4	85.7	66.7			
Miyazaki Prefecture	13.6	36.4	63.6			

(Source) Bereau of the Statistics, Population Census Reports

······································	Poŗ	oulation g	e .		
Area	1955- 1960	1960- 1965	1965- 1970	1970- 1975	1975- 1980
Nationwide	4.7	5.2	5.5	7.0	4.6
Tokyo Metropolis	20.5	12.2	5.0	2.3	Δ 0.5
Edogawa Ward	24.3	27.9	19.1	13.5	6.3
Tama City	28.2	88.5	93.2	131.1	51.4
Chiyoda Ward	∆ 4.7	∆20.4	∆10.0	Δ 3.0	Δ 7.0
Okutama Town	∆11.6	∆ 5.1	∆ 4.3	∆ 2.8	Δ 7.1
Miyazaki Prefecture	∆ 0.4	∆ 4.8	∆ 2.7	3.2	6.1
Miyazaki City	6.6	9.9	10.9	15.5	15.4
Kiyotake Town	Δ 3.9	∆ 5.7	1.9	10.2	46.1
Nishimera Village	∆ 4.3	∆26.5	∆16.7	∆23.3	∆11.0
Kitagoh Village	Δ10.1	∆18.3	∆16.5	∆16.4	∆ 5,5

# Table 2 Trends of Population Growth by Area

(Note)  $\Delta$  denotes reduction.

(Source) Bereau of the Statistics, Population Census Reports

Area	1965	1970	1975	1980
Tokyo Metropolis	108.1	110.9	114.4	116.4
Edogawa Ward	86.4	87.9	88.3	86.2
Tama City	75.0	74.7	77.8	76.2
Chiyoda Ward	829.3	1,135.5	1,515.5	1,709.7
Okutama Town	87.9	85.9	85.0	85.2
Miyazaki Prefecture	100.0	100.0	100.1	100.1
Miyazaki City	104.7	105.1	105.1	104.6
Kiyotake Town	89.3	88.5	91.3	95.1
Nishimera Village	102.0	102.9	103.2	105.2
Kitagoh Village	99.3	98.2	97.2	96.5

## Table 3 Trends of the Proportion of Day Population Per 100 of De Jure Population by Area

(Source) Bereau of the Statistics, Population Census Reports







## Figure 2 Ratio of Aged Population by De Jure and Day Population (1980)

(Source) Bureau of the Statistics, Population Census Reports.



Figure 3 Ratio of Aged Nuclear Family Households (1980)

(Source) Bureau of the Statistics, Population Census Reports.

#### Notes

- (\*1) The point made by Toshio Kuroda that "the large-scale, rapid movements of people and labor force were undeniably important factors responsible for Japan's high economic growth" is noteworthy ("Migratory Movements: Overpopulation and Depopulation," in Japan Medical Association ed., <u>Progress of Life Science</u>, Second Collection, Shunshusha, 1975, p.275 - 276.) A similar point is made in Naomichi Hayashi's Japanese Economy Today, Aoki Shoten, 1976, p.75 - 100.
- (\*2) Kuroda op. cit., p.274 275.
- (\*3) Yoichi Okazaki, "Demography of Overpopulation and Depopulation," in Mainichi Shimbunsha's Popuation Problems Survey Committee ed. (supervised by Toshio Kuroda), Japanese Population, Mikishobo, 1974, p.157.
- (\*4) Okazaki, op. cit., p.158
- (\*5) Okazaki, op. cit., p.158
- (\*6) The importance of considering the day population was suggested by the point made by Toshie Kanamori that "an apartment complex is a zone overpopulated with women, but depopulated by men, during the day on weekdays" (Women's Sociology; Men's Home Economics, Shinchosha, 1984) and the point made by Hiroshi Tanabe that "to discuss the compositon of a population by considering only the night population is to grasp only half of the geographical composition of Japan's population" (<u>1980 Population Census Monograph Series</u>, No. 6: Commuter Population, Japan Statistics Association, 1984, p.5).
- (\*7) Economic Deliberation Council, Regional Subcommittee Report: Regional Tasks for High Density Economic Society, October 1967, p.1.
- (\*8) Economic deliberation Council, op. cit., p.2.
- (\*9) Toshio Kuroda, Demographic Transition in Japan, Kokonshoin, 1976, p.217 - 218.
- (\*10) Here the rate of population growth and decrease was used to estimate the migratory movements (inflow, outflow).
- (\*11) See the author's manuscript "Population Changes and Development in Rural Society" <u>Demographic Transition in Japan and Rural</u> <u>Development</u>, Asian population and Development Association, 1985, p.88 - 89.



