

Population Structure in the Central Parts of Metropolitan Areas in Japan

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Urban population generally has a structure dissimilar to that of rural population. This is typically shown by the big amount of accumulation of productive age group employed in the secondary and tertiary industries, and also shown by the heavy movement of daytime population. This is brought about by the urban activities in the political, economical and social fields.

Metropolitan cities, like Tokyo and Oskaka, however, have a different population structure from that of other middle and small scale cities. They have specific population structure, due to the larger population concentration which is the result of the concentration of capital and the accumulation of production into the area.

In urban areas, on the other hand, differentiation into functional districts, such as administrative district, commercial district and residential district etc., has been going on, and this proceeds more clearly with the growth of city. Accordingly, the areal differentiation of population structure proceeds.

Now, one of the most remarkable features observed in the 1960 population census, was the decrease of the population in the central part of Tokyo—which is called the population decentralization of metropolitan Tokyo. The highly advanced land utilization in this area as commercial and business districts, made it inadequate economically to utilize the land for a residential purpose. This phenomenon is more clearly observed in the commercial areas than in business areas. The decentralization is caused by a general tendency in which the people who used to live in the residence attached to their working places came to separate their living places from their working places and move into the suburbs.

In this paper, the author intends to point out the characteristics of population structure of areas which have and will have a tendency of population decentralization, based mainly on census data. The specific areas, Chūō-ku in Tokyo and Higashi-ku in Osaka have been chosen as examples.

Areal Characteristics seen in the Status of Working Population and their Industrial Composition

Labor force and industrial composition

In the 1955 census, working populations were 960 thousand and 320 thousand

in Chuo- and Higashi-ku respectively. The rate of labor force to total male population aged 15 years and over is 89.2 and 91.4 percent for Chuo- and Higashi-ku respectively, which is higher than corresponding rate of the each of the whole cities. This shows that the population living in these areas are economically more active than those who live in the other areas of the city (Table 1).

Table 1. Labor Force Status and Class of Worker, 1955.

a) labor force status

	Male			Female		
	Total	Labor force	Not in labor force	Total	Labor force	Not in labor force
Chuo-ku	72,539	64,672	7,867	62,961	30,937	32,024
%	100.0	89.1	10.9	100.0	49.1	50.9
Higashi-ku	26,078	23,844	2,234	17,985	7,675	10,310
%	100.0	91.4	8.6	100.0	42.7	57.3

b) class of worker

	Male				Female			
	Total	Self-employed workers	Unpaid family workers	Employee	Total	Self-employed workers	Unpaid family workers	Employee
Chuo-ku	63,814	7,566	1,605	52,290	30,510	3,158	2,665	23,978
%	100.0	11.9	2.5	81.9	100.0	10.4	8.7	78.6
Higashi-ku	23,638	2,931	719	18,984	7,605	548	1,128	5,585
%	100.0	12.4	3.0	80.3	100.0	7.2	14.8	73.4

Source: 1955 Population Census of Japan, vol. V-13 & V-27.

According to the industrial composition of labor force, the male labor force employed in wholesale and retail trades exceeds 50 percent for both areas and exceeds 80 percent if manufacture and service industries are added to wholesale and retail trade industries. It exceeds 90 percent for female labor force employed in manufacture, wholesale and retail trade and service together, while the percentage employed in wholesale and retail trade is lower than that of male, and service industry exceeds 30 percent on the contrast to below 10 percent for male population (Table 2).

Minor grouping to wholesale and retail trade industries shows that those who are employed in wholesale amounts to 58 and 81 percent for male, and 23 and 46 percent for female in Chuo- and Higashi-ku respectively. This means that the employees engaged in wholesale trade are much more than those in retail trade for male, and vice versa for female population.

Table 2. Industry of Employed Persons, 1955.

	Male				Female			
	Chuo-ku		Higashi-ku		Chuo-ku		Higashi-ku	
construction	2,741	4.9	636	2.7	203	0.7	51	17.4
manufacturing	15,182	23.8	6,027	25.5	3,816	12.5	1,322	17.4
wholesale and retail trade	32,374	50.7	13,435	56.8	14,935	49.0	3,358	44.2
wholesale trade	19,191	(57.6)	10,907	(81.2)	3,367	(22.5)	1,538	(45.8)
retail trade	13,183	(42.4)	2,528	(18.8)	11,568	(77.5)	1,820	(54.2)
finance, insurance etc.	1,272	2.0	447	1.9	981	3.2	257	3.4
transportation etc.	4,460	7.0	796	3.4	529	1.7	123	1.6
service	5,830	9.1	1,576	6.7	9,655	31.6	2,414	31.7
government	1,665	2.6	623	2.6	334	1.1	62	0.8
others	300	0.5	98	0.4	57	0.9	18	1.2
total	63,814	100.0	23,638	100.0	30,510	100.0	7,605	100.0

Source: 1955 Population Census of Japan, vol. IV.

Generally in Japan, the high ratio of unwaged family workers to total working population characterizes the commercial activities. However, in Chuo- and Higashi-ku unwaged family workers are not very numerous (Table I) and the employed workers in private business are predominant, showing that the commercial activities in those areas mostly consist of the enterprises with employees.

As we have seen, the labor force in Chuo- and Higashi-ku are mostly those employed in the private enterprises of wholesale (male) or retail trade (female).

Characteristics of areas As has been shown by the industrial composition of employed labor force in both Chuo- and Higashi-ku, those areas are characterized as commercial districts, especially as wholesale districts, though the wholesale trade is concentrated extremely in Chiyoda-ku, Chuo-ku and Taito-ku in Tokyo and in Higashi-ku, Kita-ku, Minami-ku in Osaka. In both cities, above mentioned wards occupy more than half of whole cities respectively, in the number of enterprises, number of full time employees and the amount of monthly sale. But this concentration is most remarkable in Chuo-ku in Tokyo and Higashi-ku in Osaka.

The wholesale activity in these areas has been leading the economy of Japan since Edo era, and they still maintain the function as centers of wholesale activities not only of Tokyo and Osaka but also of Japan, going through substantial changes in accordance to the development of Japanese economic system. This change was remarkable at the periods following the Great Kanto Earthquake of 1923 and the World War II, when many residential houses were destroyed, and in many cases replaced by large establishments. So that in recent years, Chuo- and Higashi-ku came to assume the characteristics of areas combining both business and commercial districts. In another word, the business district and commercial district exist partly contiguous and partly mixing within a statistical unit of 'ku'.

Another remarkable change is the degeneration of enterprises themselves. In commercial districts, most of commercial enterprises have been private concern and the shop owners and their families as well as employees used to live in the same building as the shops or houses attached to them, living most of their daily life in the same place. But as the management systems of enterprises are modernized, their daily life has been changed accordingly. The first step of this change was observed in the separation of household finance from the enterprise finance, then, that of living place from working place. And the second step was the improvement of the employment conditions. This improvement was late to be started in Japan, and still on its way.

The Trend of Night Population

In the years from 1920 till 1935, the population of Higashi-ku was more or less stable, though Osaka went through a remarkable population increase. This is clearly observed by figure 1. The population of Higashi-ku in this period was almost the same as that of 1920, but that of Osaka had increased more than 200 percent. In contrast to the population trend of Higashi-ku, Chuo-ku had a trend of population decrease, till the year of 1930. Due to the destruction of houses by fire and earthquake in 1923, and to the flow of population, not only Chuo-ku but also Tokyo had a remarkable population decrease. In two years after this disaster,

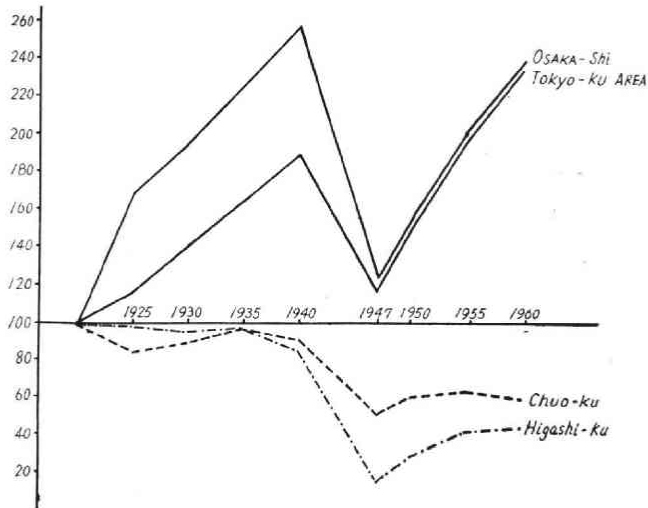


Fig. 1. Population Trend (1920=100).

Source: 1950 Population Census of Japan, Vol 1

1955	"	"	"	"
1960	"	"	"	"

the population of Tokyo increased abruptly and Chuo-ku was not excepted. But the population of Chuo-ku reached only 80 percent of the population of 1920 in 1925. And with the slow population increase since then, it reached the level of barely 97 percent of 1920 in 1935, while that of Tokyo increased about 60 percent. This shows that there was an areal differentiation of population trend in this period and that there was a large scale of population movement within the city boundary. The in-migration from outside of Tokyo caused the growth of the total population of Tokyo.

From the year of 1935 onward, when the Japanese economy transferred to the war system, the population of Chuo- and Higashi-ku had gradually decreased. And this decreasing trend was accelerated by the severe damage of houses by air raids around 1945. According to the figure of 1947, when the first population census in the postwar period was taken, it is clear that the population of those areas fell down to the level of below 20 percent of 1920 at the end of World War II.

In the post war period, Chuo- and Higashi-ku kept a stable population trend, notwithstanding the rapid population increase of Tokyo and Osaka. Since the year of 1947, a tentative and slow population increase was observed till 1950 in

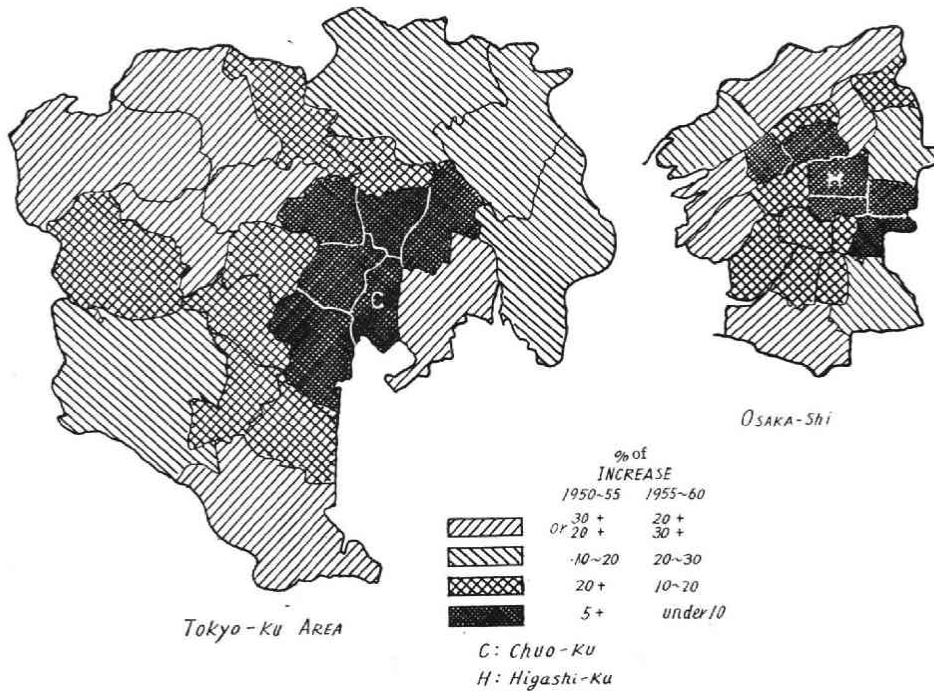


Fig. 2. Type by Population Change (1950~55 & 1955~60).

Chuo-ku and till 1955 in Higashi-ku, which is due to the reconstruction of devastated areas and the recovery of economic activities. Since then, however, night population in both areas kept almost constant or slightly decreasing trends.

The population in 1955 was about 60 percent of 1920 in Chuo-ku and 40 percent in Higashi-ku, which is a much lower level than that of prewar stable population.

Fig. 2 shows the areal differentiation of recent population changes by 'ku'. The population decentralization phenomenon of Tokyo and Osaka is clearly shown by the stable population in central parts of the city and the remarkable increase of population in the surrounding areas. However, the stable or decreasing population change had been already observed even in the prewar period as was discussed already. That is, the population of Chuo- and Higashi-ku had been undergoing a decreasing trend over a long period of time since 1920 (Fig. 3). It can

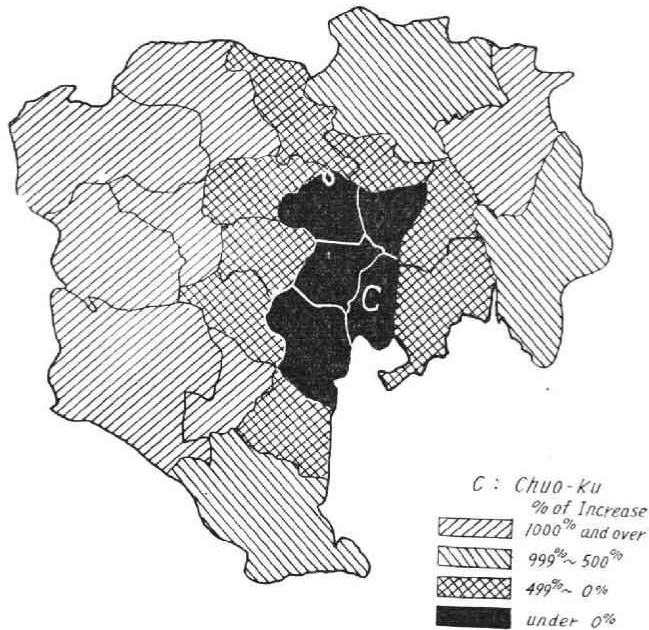


Fig. 3. Percent of Population Increase in Tokyo (1920-1960).

be said that the decreasing population in Chuo-ku observed in the period of 1955-60 was merely to strengthen this long term changing tendency.

The population of Chuo- and Higashi-ku in the past 40 years is the result of out-migration of population which is mainly caused by the separation of living place and working place of the people who lived in those areas. But the fact that

the population was more or less at about 95 percent of 1920 in the prewar period shows that the most of the population engaged in commercial activities and service still lived at their working place, being behind the progress of separation of living and working place, as the result of unmodernized managing systems in the commercial and service enterprises. And yet, the separation had already proceeded, mainly attributed to the separation of living and working place of shopowners and their families in the pre 1920 period.

It was during the postwar period that the separation phenomenon widened into the more general class of population in the area. The considerable number of population which moved out from the central part of the city around 1945, did not come back to their former living place. However, the economic activities of those areas recovered to the same or higher level than that of the prewar period, and provided many job opportunities to the people. So that it can be said that this low population level is caused by nothing more than the general separation of living and working place than during the prewar period. It means that the recent tendency of decreasing population in Chuo-ku is caused by the expansion of the phenomenon of the separation of living and working places of the employees, as a result of the process of modernization of employment conditions typically shown by the employee's turn from 'resident employee' to the 'living-out employee'. In Higashi-ku where this phenomenon is not observed yet, the population decrease will occur with the process of development of commercial activities in the near future.

Daytime and Night Population

The development of business districts caused the decrease of night population brought about by the separation of living and working places and caused the increase of daytime population. The enlarging differences between the numbers of daytime and night population is one of the characteristics of recent population movement in the central part of metropolitan areas.

In 1955, daytime population was 2.6 and 3.1 times the night population in Chuo and Higashi-ku respectively, while that in 1935 was about 1.3 times in both areas* (Table 3). This change is due to the decrease of night population and the increase of daytime population. But, as the rate of increase of daytime population was not so large as that of the decrease of night population, the enlargement of this difference depends mostly on the decrease of night population.

* The data of daytime population by census report is available only for the year of 1935 and 1955.

Table 3. Night and Daytime Population.

		night population (a)	daytime population (b)	(a)/(b)
Chuo-ku	1930	239,533	318,803	1.33
	1955	171,316	448,510	2.62
Higashi-ku	1930	166,241	221,019	1.33
	1955	56,523	183,510	3.09

Source: 1955 Population Census of Japan, vol. IV.
1935 Population Census of Japan, vol. III.

According to the changes of industrial composition of population caused by the decrease of night population which was mostly engaged in commercial and service industries and by the increase of daytime population which was engaged in the finance and communication industries etc., it shows that those areas had been strengthened in the characteristics of a business district.

When the industrial composition of night population at 1955 is compared with that of daytime population, it is clear that finance (21 and 33 times in Chuo- and Higashi-ku respectively), transportation (6 and 11 times), and construction (7 and 8 times) have the bigger differences, while that of wholesale and retail trade (3 and 4 times) and service (3 times in both areas) have relatively smaller differences. In 1935, the differences between night and daytime population engaged in commercial industries was only 1.6–1.7 times (Table 4).

The Age Composition and Migration

Demographic differentials of decentralization phenomenon are observed in those areas as well as the differential decentralization by social class of population. This is clearly shown by the specific age structure of night population in those areas, i.e., by the fact that the percentage of population aged 15–29 is remarkably large. In 1955, the age group of 15–29 years occupied about 50 percent of the total male population (52 percent in Chuo-ku and 53 percent in Higashi-ku), and about 30 percent of the female population (Fig. 4). In general, the high percentage of this age group is one of the most distinguished characteristics of the urban population structure. But it is clear that the population aged 15–29 is remarkably concentrated while the percentage of younger and older population is less than those of the entire city, when the age structure of Chuo- and Higashi-ku is compared with that of Tokyo and Osaka.

Figure of 1960 for Tokyo shows that the concentration of the age group of 15–29 has increased more.* It may be said, from this fact, that the population of

* This figure is based on the registration data of Dec. 31, 1960.

Source: Tokyo-To: Number of household and population by registration, Jan. 1961.

Chuo- and Higashi-ku will be composed of mainly the age group of 15-29 years (especially in male population) in the future, if the present trend continues. Further more, the high sex ratio and the high ratio of unmarried population will be one of the distinguished characteristics of this area in the near future.

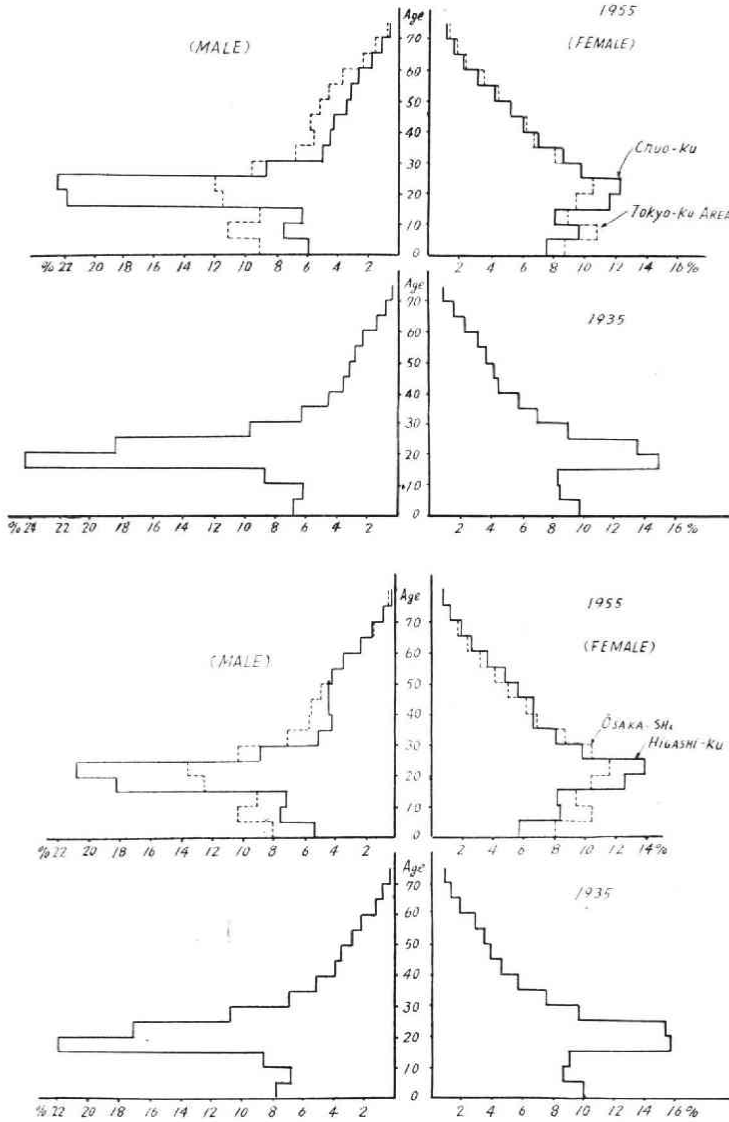


Fig. 4. Age Composition of Chuo-ku and Higashi-ku (1935 and 1955).
 Source: 1955 Population Census of Japan vol. V-13 & V-27.

The same age composition was observed in the postwar period, but then, the age group which had the highest percentage in the total population shifted from 15-19 years in the prewar period to 20-24 years in the postwar period. This difference is observed commonly in both Chuo- and Higashi-ku. This change may be due to the extension of the term of compulsory education and to the changes of the employment conditions in commercial activities which are the phenomena observed in the postwar period.

Analyzing the age composition of population in a small area, we must eliminate the deviation caused by the age structure of the nation as a whole from the small area's age composition to find the area's population characteristics. For this

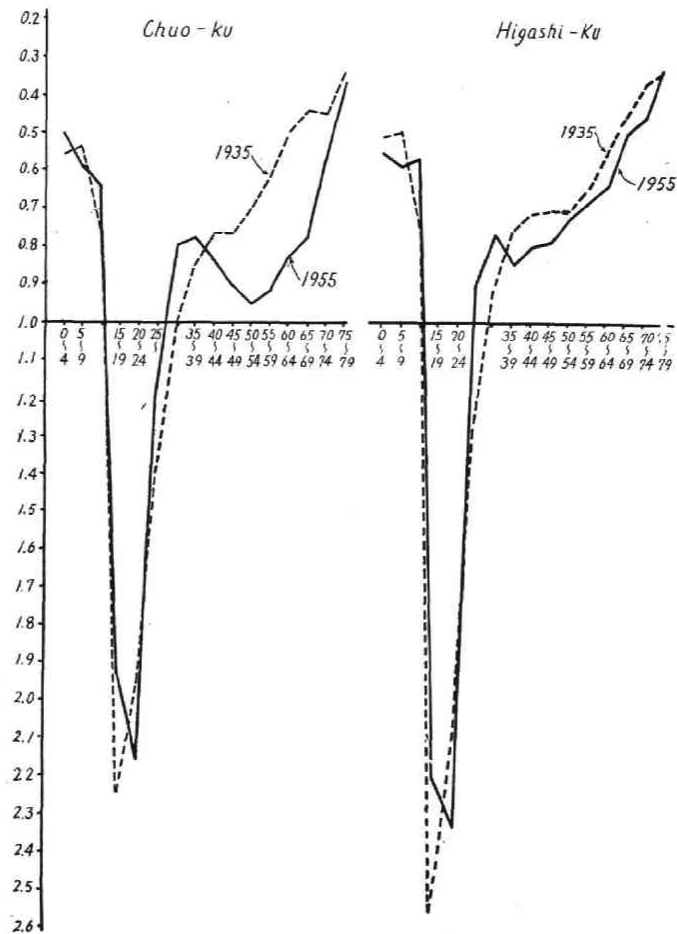


Fig. 5. Location Quotient of Age Composition.

purpose, we have statistical techniques, such as the location quotient index or the standardization of the age composition. Figure 5 shows the result of this standardization for the male population.* The index number shows that, when it is 1.0 at an age group, it has the same percentage of that age group as that of Japan, and if it is over 1.0 it has a more concentrated age composition for that age group than that of Japan.

According to the distribution of index number by age, it is clear that in the prewar and postwar periods, the night population in Chuo- and Higashi-ku was extremely concentrated in the age group of 15-24 years. The younger and older age group is far less than that of all Japan. And in Higashi-ku, the concentration of the age group 15-24 is much more than in Chuo-ku.

The age composition of Chuo-ku in the postwar period differs greatly from that in the prewar period, when it is compared with the index number. The detailed process of this change in the postwar period is shown in Fig. 6. It is clear that the concentration of the age group of 15-24 was severely reduced and that of 30-65 increased in 1950. However, within ten years following then, the concentration of the age group of 15-29 had increased and the deconcentration of the age group 30-40 had increased with a smaller index number between the ages of 30-39 than that of 40-60. This shows that the decentralization phenomenon in the central part of the city did not occur over all age groups at the

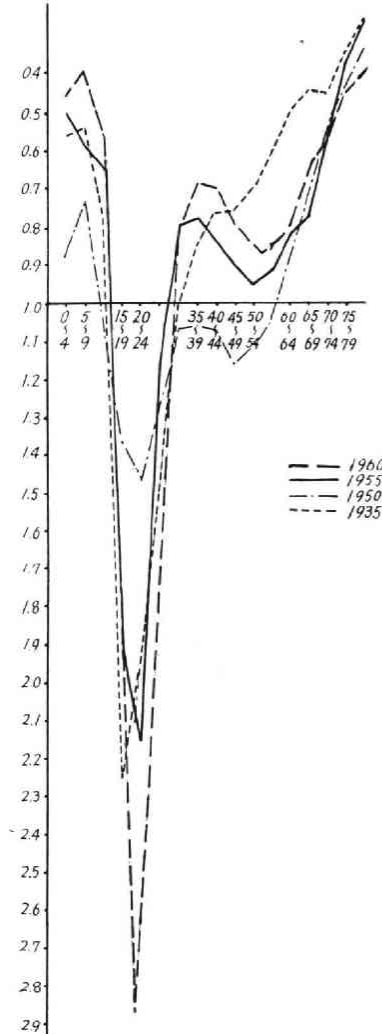


Fig. 6. Location Quotient of Age Composition in Chuo-ku (1935~1960).

* This index is calculated as follow

$$\text{Index at age X of area A} = \frac{\% \text{ of population at age X of area A}}{\% \text{ of population at age X of all Japan}}$$

same degree, but occurred mostly at the age of 30–50. The age group of 15–24 is, in the contrast, still concentrated into the area.

This change of age composition was attributed to the differential in-migration of Chuo- and Higashi-ku. According to the net-migration rate by age and sex in both Chuo and Higashi-ku in 1950–55, (Table 5) the age of 15–24 has a high net-

Table 4. Industrial Composition of Night and Daytime Population (1955).

	Chuo-ku			Higashi-ku		
	Night Population (a)	Daytime Population (b)	(a)/(b)	Night Population (a)	Daytime Population (b)	(a)/(b)
construction	2,944	20,411	7.17	687	5,417	7.89
manufacturing	18,998	89,275	4.70	7,349	34,521	4.70
wholesale and retail trade	47,309	145,655	3.08	16,793	61,770	3.68
finance, insurance etc.	2,253	47,319	21.00	704	23,456	33.22
transportation etc.	4,989	30,198	6.05	919	10,143	11.03
service	15,485	43,753	2.83	3,989	11,956	3.00
government	1,999	6,303	3.15	685	12,461	1.82
others	347	3,278	—	117	698	—
total	94,324	386,192	4.09	31,243	160,422	5.13

Source: 1955 Population Census of Japan, vol. IV.

in-migration rate (for example, 180.8 percent in Chuo-ku and 454.5 percent in Higashi-ku for males of age 15–19), and the age groups of 25 and over have a low net-in-migration rate or the net-out-migration rate.* During the period of 1950–55, the population of Chuo- and Higashi-ku increased in the total number, but during this period, Chuo-ku had an net-out-migration in some age groups. This indicates that, in the next period (1955–60), when the total population decreased, Chuo-ku had an out-migration in older age groups and an in-migration in productive age groups with a higher rate than that of the former period.** Higashi-ku was still under an increasing trend in 1955–60, but in the near future, it will also have the out-migration by some age groups, may be in older age groups as was seen in the case of Chuo-ku. As a result of this differential in-migration in those areas, the age structure of the central part of the metropolitan areas came to be a peculiar one, and would have a more distorted structure unless the present employment conditions are evolved and unless the reconstruction project of the central part of city proceeds, because this differential migration means that the separation of living and working places is carried out by the people aged 30 and over. Most

* The net-migration is estimated by Survival Ratio Method, using the census data by age and sex.

** Since the 1960 census data for Tokyo and Osaka by ku has not been reported yet, net-Migraton can not be estimated.

of the people aged 15-24 are still under the condition of 'living-in employees'.

Table 5. Net-migration Rate, 1950-55.*

(%)

Age	Chuo-ku		Higashi-ku	
	Male	Female	Male	Female
0-4	-16.0	-15.3	21.4	17.7
5-9	-8.0	-7.9	29.3	27.9
10-14	180.1	69.4	454.5	137.1
15-19	61.3	22.7	104.4	52.3
20-24	-19.5	-15.9	-3.5	13.5
25-29	-34.9	-17.3	-7.5	16.5
30-34	-26.6	-12.9	10.4	22.4
35-39	-20.2	-7.6	9.6	18.7
40-44	-13.0	-6.7	9.8	23.5
45-49	-13.7	-8.0	6.9	12.0
50-54	-12.6	-9.0	10.9	8.5
55-59	-8.7	-9.1	5.7	4.0
60-64	-11.7	-7.3	-1.2	8.3
65-69	-12.7	-10.0	8.2	18.5
70-74	-14.4	-6.7	10.4	12.3
75-79	-9.1	-8.4	4.4	16.9
80 and over	-4.0	-5.1	10.0	10.2

* Estimated by Survival Ratio Method.

Concluding Remarks

Analysis and considerations have been tried on the demographical characteristics of Chuo- and Higashi-ku as examples of the central parts of metropolitan Tokyo and Osaka. Since they stand as business districts as well as commercial districts, the characteristics of population structure of those areas are closely connected with the economic characteristics as business and commercial districts. The population structure of those areas will be made clearer by the more detailed study on the nature of commercial activities and the employment conditions. For this reason, it can be said that this study is just a first step in the study of the population of Chuo- and Higashi-ku.

In concluding this paper I would like to express my thanks to Dr. Shiro Sugai who kindly gave me his thoughtful advice.

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