

Urbanization and Habitability ***—Sapporo Case—***

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C O N T E N T S

Tables	iv
Figures	v
Abstract	vi
I. Introduction	1
II. Sociodemographic Characteristics of Sapporo	2
III. Research Methods and Results on Habitability in Sapporo	22
IV. Findings and Suggestions	22
References	36

T A B L E S

1. Population Growth in Japanese Large Cities	4
2. Changes in Social Increase in Eleven Large Japanese Cities	7
3. Changes in Migration of Sapporo City within Hokkaido and outside Hokkaido	8
4. Population of Sapporo Classified by the In-Migrated Period	9
5. Population Growth by the Distance from the Center of Sapporo City	12
6. Number of Normal Households by Household Categories	19
7. Changes in Average Age	20
8. Comparison of Average Age in Eleven Large Cities in Japan	21
9. List of Total Evaluations by Each District	23
10. Evaluation of Habitability, Past and Future, by Districts	24

FIGURES

1. Population Trends of Sapporo (rearranged on the basis of current city boundary)	3
2. Changes in Social Increase Rate	5
3. Changes of Population Increase in Five Years (1975.10.1 - 1980.10.1) by Each Statistical Tract	11
4. Changes in the Proportion of Normal Households by Household Pattern	14
5. Proportion of Population Aged over 65	15
6. Percentage of One-Person Households	16
7. Percentage of Nuclear Families by District	17
8. Percentage of Newcomers in Each District (migrated after 1975)	18
9. The Reasons for Being Attracted by Sapporo (multiple choice up to 3 per respondent)	25
10. Habitability Evaluation toward Residential Area	26
11. Habitability Compared with Five Years Ago	27
12. Prediction of Habitability after Five Years (relative evaluation)	28
13. Reasons of Preference of Settlement in Migration to Sapporo (multiple choice up to 2 per respondent)	29
14. "Wheel-type" Model for Measuring Habitability	33

A B S T R A C T

Using the rapidly growing city of Sapporo in Hokkaido as a case study, this paper proposes a model of habitability measurement for the city. The concept of habitability was defined as consisting of (1) physical conditions such as clothing, food, housing, health, sanitary and environmental conditions; (2) individual accessibility to public facilities; (3) solidarity among citizens; and (4) social mobility. Using this definition, a questionnaire was constructed and mailed to a proportionate random sample. The habitability model was derived from an analysis of the 7,608 survey responses in respect to the differences in socio-ecological change in each social district within the city, residents' evaluations regarding habitability in each district and various municipal policies presented toward habitability improvement.

Sapporo City is a single-core city in that it has expanded beyond its planned city center into the suburbs through rapid population growth due to in-migration and annexation of villages and towns after World War II. From the core zone, which is the central business district, radiate concentric circles of residential districts. The results of the evaluations of living conditions indicate that the differences in habitability in each of these districts was deeply correlated with the ecological characteristics of the city.

I. Introduction*

The problem of "urbanization and way of life" is one of the main concerns in the field of urban sociology. This paper proposes a model of habitability measurement for the city with respect to the impact of population growth upon its habitability by analyzing the differences in socio-ecological change in each social district rezoned within the city, residents' evaluations regarding habitability in each district and various municipal policies proposed in the interest of habitability improvement. Sapporo City was chosen as a case study to pursue this interest.

Habitability, as defined in our study, is an overall conception which consists of the following factors--(1) physical conditions such as food, clothing, housing, health, as well as sanitary and environmental conditions; (2) individual accessibility to public facilities; (3) solidarity among citizens; and (4) social mobility.

I hope this study will provide useful examples for the city planners working toward urban development and improvement in the quality of life in Asian developing nations. (For detailed information concerning the development process and population distribution of Hokkaido provided by the Japanese Government, see UNFPA, Planned Population Distribution for Development: Hokkaido Experience, New York, 1981.)

* An earlier version of this paper was presented at the Fourth Parliamentarians Seminar on Population, Resources, and Development held at Sapporo in February 1985. As for details of the survey at Sapporo, please refer to Social Diagnosis of One-and-half Million City: A Study of Habitability of Sapporo City, by Kiyohide Seki (Department of Citizen Affairs, Sapporo City, 1982).

II. Sociodemographic Characteristics of Sapporo

Following the establishment of the Colonization Agency in 1869, Sapporo was developed as the central administrative city in Hokkaido. According to the national census data which began in 1920, the population in Sapporo since that time has continued to grow year by year. This includes growth due to the rearrangement of city boundaries by the annexation of neighboring towns and villages (Figure 1). The population of Sapporo City was 1,401,758 in 1980 according to that year's census data. This ranks Sapporo as the 6th largest city in the nation, following Tokyo, Yokohama, Osaka, Nagoya and Kyoto. In 1973, the number of people had already passed one million and Sapporo City had been designated as a "gazetted area."

The following five significant demographic characteristics which influence habitability are described for Sapporo City in comparison with ten other cities of Japan.

1. Rapid Population Growth and High Rate of Increase

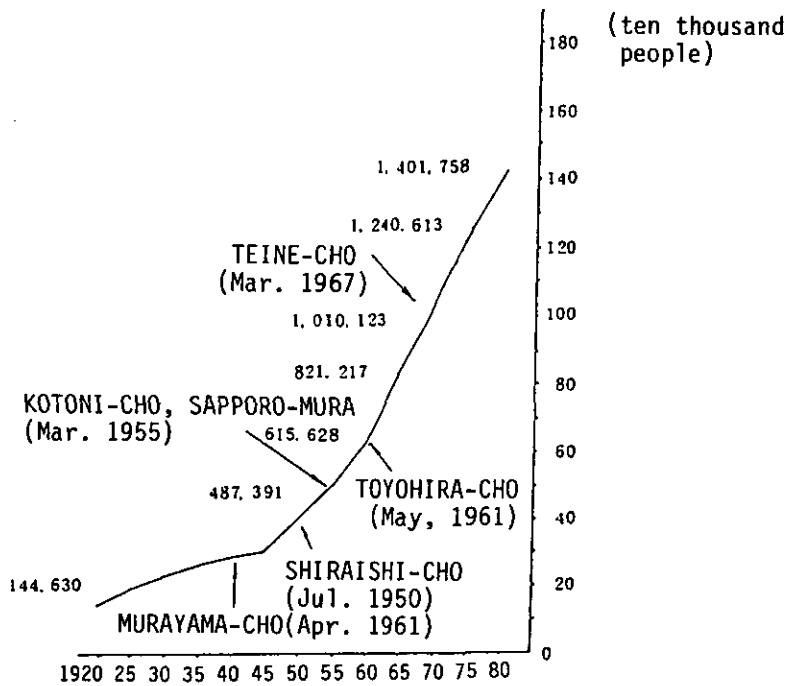
From 1960 to 1965, the population increased by 205,589, which was the fifth largest population growth in the nation (Table 1). However, Sapporo's 33.4 percent increase in population ranked second following Kawasaki, ranked first with 35.1 percent. From 1965 to 1970, Sapporo City moved to the position of second largest population increase in the nation following Yokohama City, and was also second in terms of the rate of increase. From 1970-1975, although Sapporo was again second to Yokohama in population increase, it ranked first in the rate of increase at 22.8 percent. Sapporo City finally reached the first rank in both population increase and rate of increase from 1970-1980.

2. Social Increase as a Major Factor

The rapid population growth in Sapporo as mentioned above is mainly due to social increase. For example, as a special case, the 82.1 percent social increase rate shown in 1963 was the result of temporary in-migration of unemployed coal-miners within Hokkaido. Even if we exclude this case as an exception, the annual overall proportion of social increase rate during the past 21 years (1960-1980) averages

Figure 1. Population Trends of Sapporo

(rearranged on the basis of
current city boundary)



Source: Population and Housing of Sapporo, Sapporo City Office, 1981.

Note: 1. 'cho' means town.
2. 'mura' means village.

Table 1. Population Growth in Japanese Large Cities

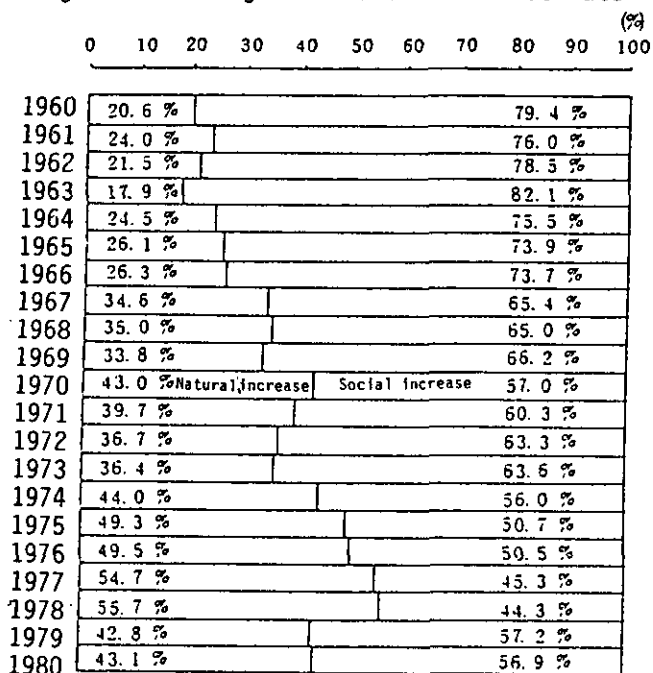
City	Number of Population Increase				Population Increase Rate (%)			
	1960 -1965	1965 -1970	1970 -1975	1975 -1980	1960 -1965	1965 -1970	1970 -1975	1975 -1980
Sapporo	205,589	188,906	230,490	161,145	33.4	23.0	22.8	13.0
Tokyo	583,067	Δ 52,152	Δ 194,422	Δ 297,311	7.0	Δ 0.6	Δ 2.2	Δ 3.4
Kawasaki	221,891	118,620	41,465	25,747	35.1	13.9	4.3	2.5
Yokohama	413,205	449,338	383,518	152,051	30.0	25.1	17.1	5.8
Nagoya	238,337	100,623	43,687	8,144	14.0	5.2	2.1	0.4
Kyoto	80,189	54,158	41,894	11,934	6.2	4.0	3.0	0.8
Osaka	144,659	Δ 175,735	Δ 201,500	Δ 130,829	4.8	Δ 5.6	Δ 6.8	Δ 4.7
Kobe	102,689	72,271	71,668	6,787	9.2	5.9	5.6	0.5
Hiroshima	99,378	88,921	106,324	46,783	17.8	13.5	14.2	5.5
Kitakyushu	55,987	Δ 70	15,740	7,026	5.7	Δ 0.0	1.5	0.7
Fukuoka	86,811	102,541	130,484	86,416	12.7	13.3	15.0	8.6

Source: Population and Housing of Sapporo, Sapporo City Office, 1981.

Note: Δ indicates population decrease.

63 percent per year. Social increase averages 24,669 per year and this number is almost 1.7 times as much as the natural increase rate--14,167. Only in 1977 and 1978 did the natural increase rate outnumber the social increase rate. However, since then, social increase has counted for over 50 percent of the total increase (Figure 2).

Figure 2. Changes in Social Increase Rate



Source: Population and Housing of Sapporo, Sapporo City Office, 1981.

If we compare these data with those of other big cities in terms of social increase rates, only three cities, Sapporo, Yokohama and Fukuoka, have been increasing since 1976 (Table 2). Even among these expanding cities, the social increase rate of Sapporo shows an incredibly high proportion of increase. The increase is six times higher than Yokohama City. From 1978 to 1979, there is a rapid social decrease in Yokohama and a slight increase in Fukuoka, but the social increase in Sapporo still indicates a 60 percent increase.

3. High Mobility

Such a high social increase rate in terms of population growth means that a large number of people have in-migrated from outside Sapporo City, thus indicating high mobility. Table 3 presents the population mobility of Sapporo during ten years after 1971 in terms of the distinction of "within Hokkaido" and "outside of Hokkaido." In 1980, the data show a total of 93,376 people for in-migration and 74,159 people for out-migration. Of those numbers, 69 percent of the in-migration and 62 percent of the out-migration indicated that the movement was within Hokkaido. The in-migration number of about 30,000 people from outside Hokkaido is nearly the same as the out-migration number who migrated outside of Hokkaido. The reason for this phenomena maybe assumed to be the result of population transfers and interchanges related to business purposes.

The in-migration volume within Sapporo City also shows quite high mobility. The 1980 census data on the in-migration period (Table 4) demonstrates this tendency. According to the data, people who have never moved since birth in Hokkaido are only 123,930 or 8.8 percent of the total population. On the other hand, 91.1 percent of the population(1,275,974) are in-migrants from outside Sapporo City or have moved within the city of Sapporo.

Among those people, 74.7 percent settled in their current residential place after 1960. Notably, 53.7 percent of the total population settled here after 1975. If we define "newcomers" as those who have been living at their current address for less than five years, the data indicates that over half of Sapporo's citizens can be called "newcomers."

Table 2. Changes in Social Increase in Eleven Large Japanese Cities

City	1975	1976	1977	1978	1979
Sapporo	18,470	18,091	13,691	13,182	21,167
Tokyo	Δ 139,018	Δ 153,191	Δ 126,211	Δ 109,862	Δ 102,056
Kawasaki	Δ 10,933	Δ 4,246	Δ 7,196	Δ 4,836	Δ 9,134
Yokohama	7,943	3,091	3,418	4,930	712
Nagoya	Δ 23,746	Δ 22,131	Δ 18,161	Δ 17,205	Δ 17,285
Kyoto	Δ 10,303	Δ 11,959	Δ 7,949	Δ 8,884	Δ 8,871
Osaka	Δ 54,140	Δ 50,098	Δ 45,503	Δ 36,589	Δ 31,906
Kobe	Δ 2,879	Δ 10,112	Δ 9,247	Δ 5,947	Δ 8,686
Hiroshima	206	Δ 3,339	Δ 1,710	Δ 3,863	Δ 66
Kitakyushu	Δ 6,220	Δ 5,240	Δ 7,210	Δ 9,881	Δ 8,732
Fukuoka	19,001	5,698	3,338	3,535	3,652

Source: Population and Housing of Sapporo, Sapporo City Office, 1981.

Note: Δ indicates population decrease.

Table 3. Changes in Migration of Sapporo City within Hokkaido and outside Hokkaido

Year	In-Migration			Out-Migration			Net-Migration		
	Total	from	outside	Total	from	outside	Total	from	outside
		Hokkaido	Hokkaido		Hokkaido	Hokkaido		Hokkaido	Hokkaido
NUMBERS									
1971	100,421	73,600	26,821	74,140	40,780	33,360	26,281	32,820	6,539
1972	100,502	72,487	28,015	74,023	41,362	32,661	26,479	31,125	4,646
1973	108,206	76,747	31,459	76,826	44,708	32,118	31,380	32,039	659
1974	101,344	69,458	31,886	76,616	46,147	30,469	24,728	23,311	1,417
1975	94,096	63,440	30,656	75,020	46,499	28,521	19,076	16,941	2,135
1976	91,763	61,600	30,163	74,074	46,345	27,729	17,689	15,255	2,434
1977	91,379	61,480	29,899	77,494	48,551	28,943	13,885	12,929	956
1978	89,321	60,217	29,104	76,287	47,408	28,879	13,034	12,809	225
1979	94,857	54,592	30,265	73,952	45,785	28,167	20,905	18,807	2,098
1980	93,376	64,224	29,152	74,159	45,719	28,440	19,217	18,505	712
PERCENTAGE (%)									
1971	100.0	73.3	26.7	100.0	55.0	45.0	--	--	--
1972	100.0	72.1	27.9	100.0	55.9	44.1	--	--	--
1973	100.0	70.9	29.1	100.0	58.2	41.8	--	--	--
1974	100.0	68.5	31.5	100.0	60.2	39.8	--	--	--
1975	100.0	67.4	32.6	100.0	62.0	38.0	--	--	--
1976	100.0	67.1	32.9	100.0	62.6	37.4	--	--	--
1977	100.0	67.3	32.7	100.0	62.7	37.3	--	--	--
1978	100.0	67.4	32.6	100.0	62.1	37.9	--	--	--
1979	100.0	68.1	31.9	100.0	61.9	38.1	--	--	--
1980	100.0	68.8	31.2	100.0	61.6	38.4	--	--	--

Source: Population and Housing of Sapporo, 1981.

Table 4. Population of Sapporo Classified by the In-Migrated Period

Period of In-Migration	Population			Proportion (%)		
	Total	Male	Female	Total	Male	Female
Total	1,401,758	691,189	710,569	100.0	100.0	100.0
From Birth	123,930	65,186	58,744	8.8	9.4	8.3
Before 1954	117,129	52,566	64,563	8.4	7.6	9.1
1965-1969	111,517	52,210	59,307	8.0	7.5	8.3
1970-Sep. 1975	293,585	140,798	152,787	21.0	20.4	21.5
Oct. 1975-Sep. 1979	502,241	249,288	252,953	35.8	36.1	35.6
After 1979	251,502	129,937	121,565	17.9	18.8	17.1

Note: Since the total numbers include the number of people whose immigrated period was unknown, the total numbers of subcategories do not match with the total numbers.

4. Decrease of Population in the Central District and Suburbanization

Population decrease in the central district and suburbanization are very common phenomena widely seen in large cities and can also be seen in Sapporo. The people moving out of the central area tend to choose residential areas with higher habitability within the city or "bedroom towns" located outside the city. Since there is a wide suburban area around Sapporo City, the phenomenon of suburbanization has been caused by residents seeking better living conditions.

Figure 3 and Table 5 present information on this trend. If we divide the city into four zones in terms of radius distance from the center, we find clear differences of mobility among these zones. There is the first center circle zone in which the radius is under 3 kilometers, a second donut-shaped zone with 3 to 6 kilometers distance from the center, a third zone from 6 to 9 kilometers and the last zone with more than a 9 kilometer distance from the center.

During the five years of the inter-census period (1975-1980), a population increase can be seen within the zones in which the location is more than 6 kilometers away from the center, whereas a decrease in population is found in the inner zone. Although 58.4 percent of the total population lived in the innermost center zone in 1960, the 18.0 percent living there in 1980 indicates a heavy population decrease over twenty years.

For the second zone (3-6 kilometers), a rapid population increase was shown between 1960 and 1970. In 1975, its population was 42.7 percent of the total population of the city. However, after the peak of 1975, the share of the population in this zone has been gradually decreasing. This zone includes the area between the outskirts of the city and the central business district of Sapporo. An identical population decrease can be seen along the subway or bus lines extending to the suburbs.

For the third and fourth zones, less than 40,000 people lived in these areas in 1960 and the share was about 6 percent of the total population in each zone. However, the recent population growth in these zones is quite remarkable.

In the third zone (6-9 kilometers from the center), the increase rate over five years from 1960 to 1965 indicates a 134 percent increase. In 1980, the population grew to be 25.2 percent of the

Figure 3. Changes of Population Increase in Five Years(1975.10.1.-1980.10.1)
by Each Statistical Tract

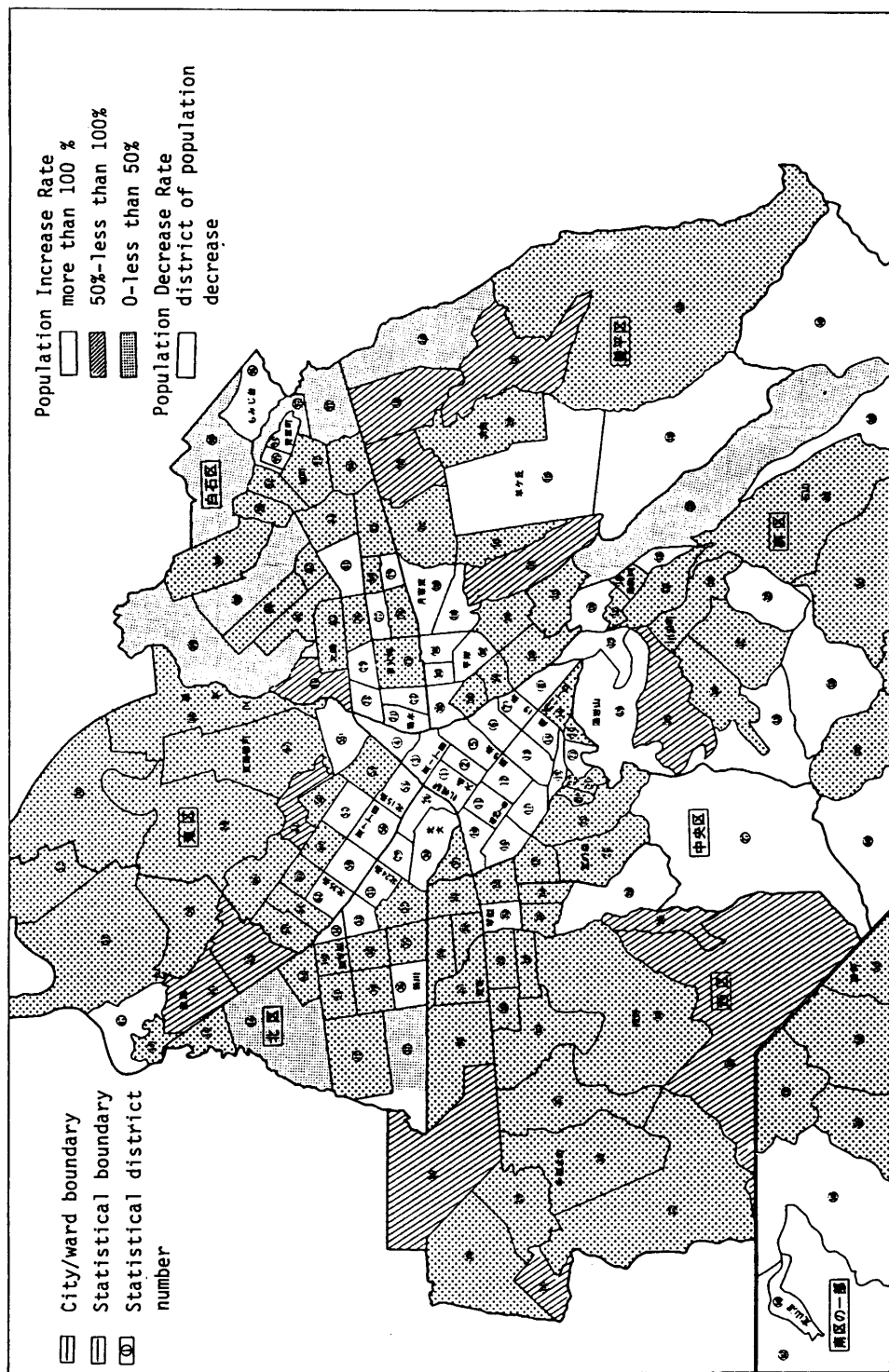


Table 5. Population Growth by the Distance from the Center of Sapporo City

Distance from the Center of the City	Population					Increase Rate (%)			
	1960	1965	1970	1975	1980	1960 -1965	1965 -1970	1970 -1975	1975 -1980
Total	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	33.4	23.0	22.8	13.0
	615,628	821,217	1,010,123	1,240,613	1,401,758				
Less than 3 Km.	(58.4)	(43.3)	(32.3)	(22.2)	(18.0)	1.0	8.3	15.7	8.5
	359,397	355,696	326,192	274,952	251,633				
3-6 Km.	(29.5)	(39.1)	(42.5)	(42.7)	(41.6)	77.2	33.6	23.5	10.1
	181,371	321,382	429,294	530,386	583,695				
6-9 Km.	(6.2)	(11.0)	(16.4)	(22.9)	(25.2)	134.3	83.7	71.9	24.3
	38,413	89,995	165,347	284,262	353,363				
More than 9 Km.	(5.9)	(6.6)	(8.8)	(12.2)	(15.2)	48.6	64.9	69.1	41.1
	36,447	54,144	89,290	151,013	213,067				

Source: Population and Housing of Sapporo, 1981.

Note: () indicates component ratio.

total population, or 9 times as much as it had been in 1960.

In the last zone (more than 9 kilometers from the center), the population has expanded by 6 times for the twenty year period from 1960 to 1980. Furthermore, the 41.1 percent rate of increase from 1975-1980 is the highest among the four zones.

5. Socio-economic Characteristics of Social Districts

As described above, Sapporo has experienced a process of rapid population growth and diffusion into the suburbs. Needless to say, this demographic change brought with it a redistribution of social and geographical composition and changes in the socio-economic characteristics of each social district.

In this survey, a detailed analysis of the demographic characteristics of each social district in relation to the social characteristics has been done in order to provide the data for the habitability measurement. However, space limitations do not permit a detailed description at this time. Therefore, selected tables and figures regarding social characteristics are presented in this paper (Figures 4 to 8 and Tables 6 to 8).

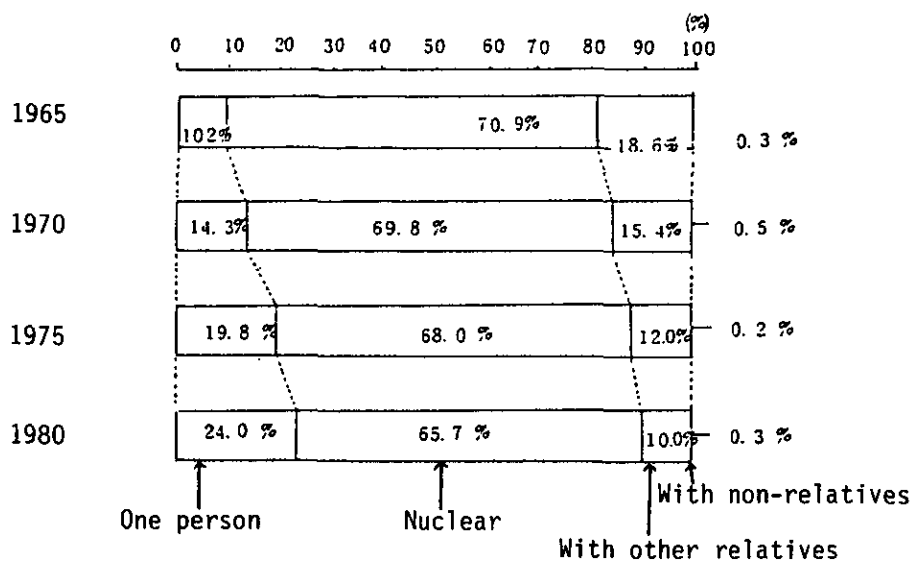
6. Summary

To what extent does the socio-demographic characteristics of Sapporo City influence habitability and the residents' evaluation?

As previously discussed, the first unique point regarding the demographic pattern in Sapporo was the high social increase rate and the fact that it was mainly an in-migrating population from other cities, town and villages within Hokkaido. Such a rapid population growth based on social increase inevitably brought a mixed-residence and complexity of inhabitant compositions which would influence the forming of local organizations and grass-roots activities in both positive and negative ways.

Secondly, the high mobility within and outside of Sapporo City and the majority proportion of newcomers currently residing in Sapporo creates potential social problems as well as determines the habitability of each district. As indicated in Figure 8, newcomers tend to show a smaller proportion around the central district than in the suburban area. The more the area expands into the suburbs, the more the proportion of newcomers tends to increase.

Figure 4. Changes in the Proportion of Normal Households by Household Pattern



Source: Population and Housing of Sapporo, 1981.

Figure 5. Proportion of Population Aged over 65

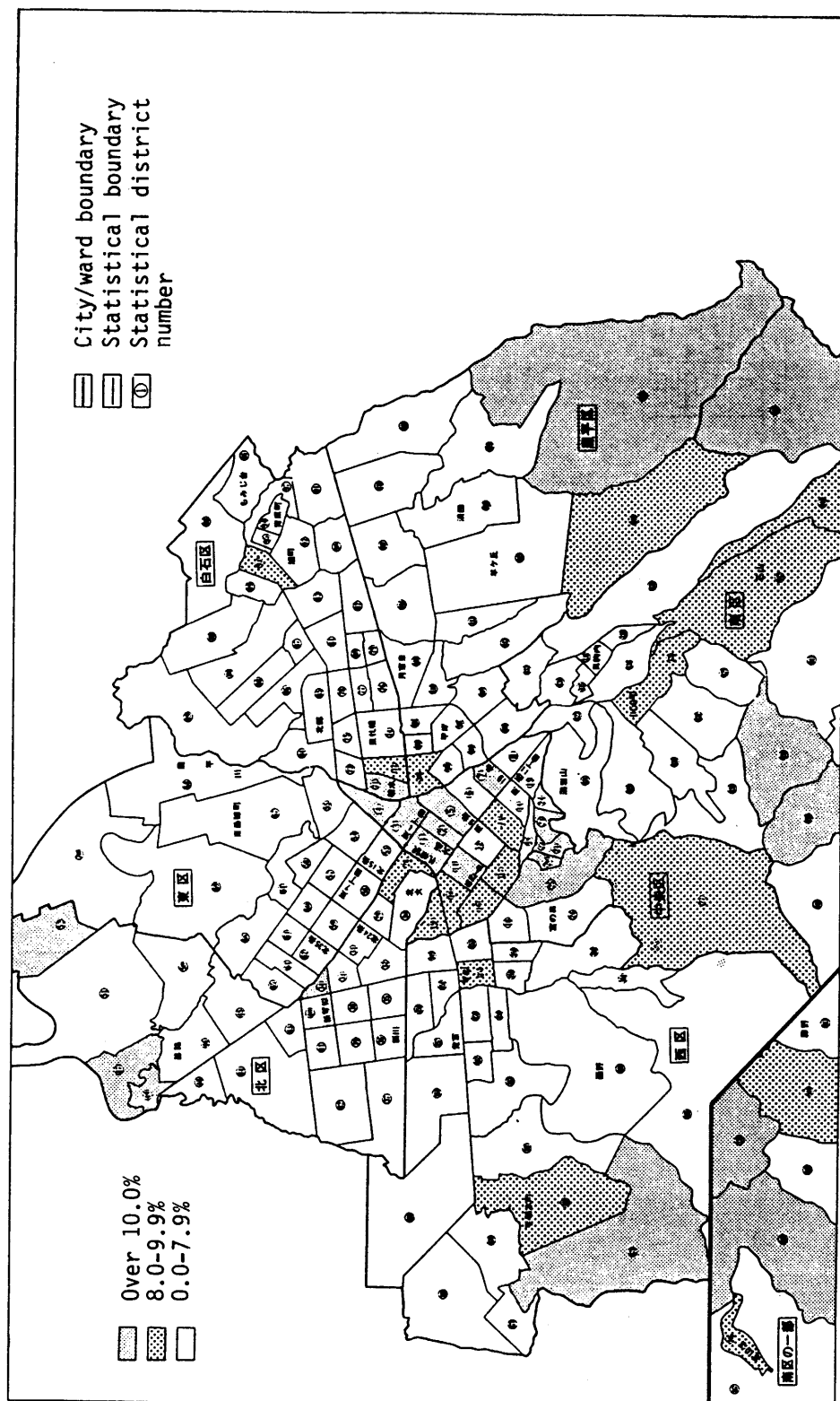


Figure 6. Percentage of One-Person Households

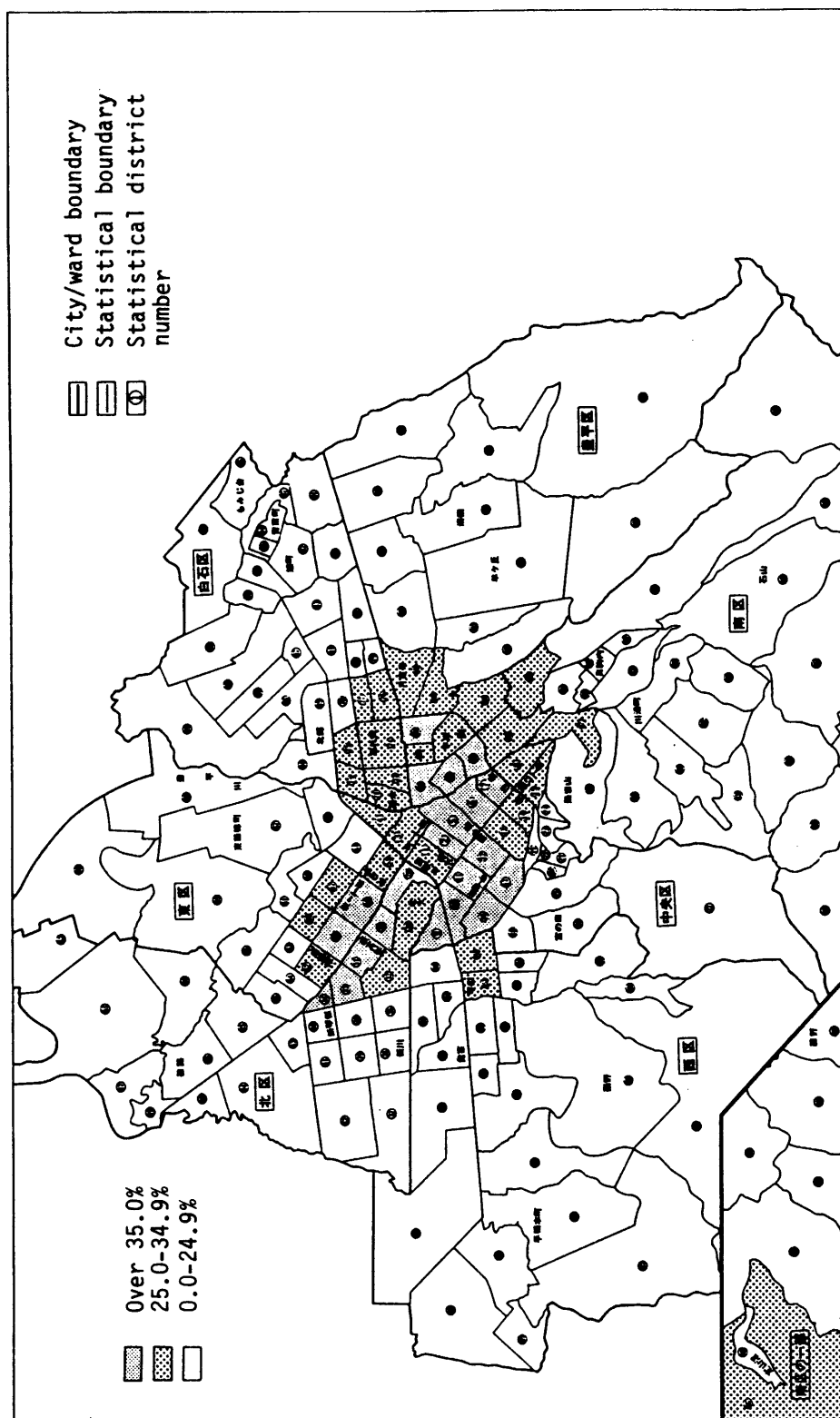


Figure 8. Percentage of Newcomers in Each District (migrated after 1975)

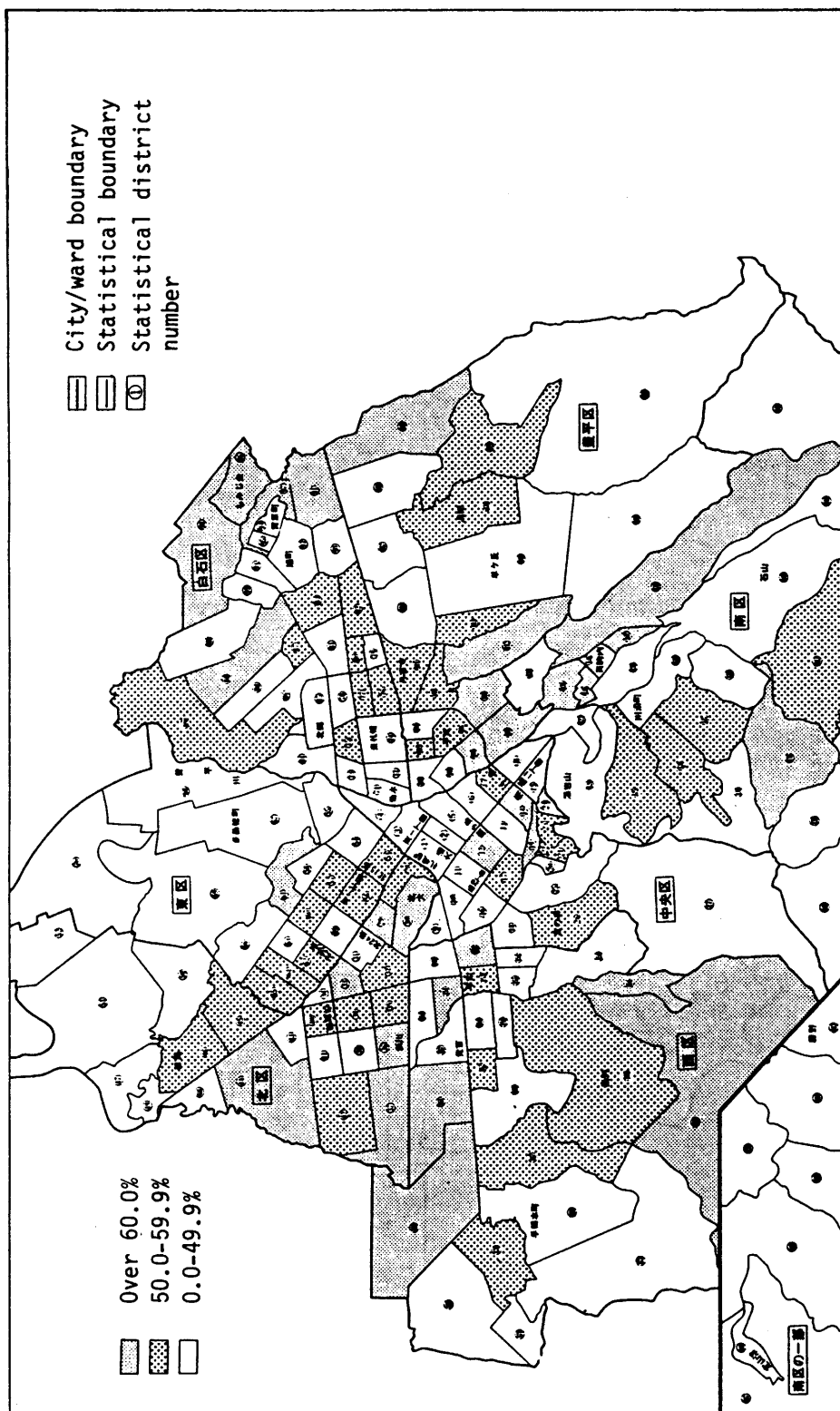


Table 6. Number of Normal Households by Household Categories

(Oct. 1)

Household Pattern	Number of Households			Percentage(%)		
	1970	1975	1980	1970	1975	1980
<u>TOTAL</u>	286,547	395,518	478,155	100.0	100.0	100.0
<u>Kinship Household</u>	243,981	316,251	361,936	85.2	80.0	75.7
<u>NUCLEAR FAMILY</u>	199,919	268,737	314,023	69.8	68.0	65.7
MARRIED COUPLE	39,379	60,037	72,224	13.8	15.2	15.1
MARRIED COUPLE WITH CHILDREN	142,397	186,288	211,792	49.7	47.1	44.3
PARENT (FATHER ONLY) WITH CHILDREN	2,332	2,847	4,304	0.8	0.7	0.9
PARENT (MOTHER ONLY) WITH CHILDREN	15,811	19,565	25,703	5.5	5.0	5.4
OTHERS	44,062	47,514	47,913	15.4	12.0	10.0
MARRIED COUPLE AND PARENTS	581	938	970	0.2	0.2	0.2
MARRIED COUPLE AND ONE PARENT	1,868	3,037	3,836	0.7	0.8	0.8
THREE GENERATIONS	4,337	5,179	5,807	1.5	1.3	1.2
MARRIED COUPLE WITH CHILDREN & PARENT	14,400	16,250	17,691	5.0	4.1	3.7
OTHERS	22,876	22,110	19,609	8.0	5.6	4.1
<u>Non-Kin Household</u>	1,509	871	1,540	0.5	0.2	0.3
<u>One Person Family</u>	41,057	78,396	114,679	14.3	19.8	24.0

Source: Population and Housing of Sapporo, 1981.

Third, similar areas of population decrease were the midtown area and the districts alongside the public transportation systems located between the midtown and the suburban area (Figure 3). This indicates that these areas which used to be residential areas are gradually losing their habitability. It also suggested that the expansion of the transportation system brings not only an increased number of citizens who enjoy the benefits of suburbanization, but it also brings an increase in the number of people suffering from the demerits of urbanization, such as air pollution caused by exhaust, traffic noise, and the effect on homes caused by passing cart truck vibrations.

As the fourth characteristic, remarkable suburbanization can be seen in the population growth of Sapporo City as shown in Figure 3. It suggests flexibility in the habitability of each social district within this city. However, it also means that such phenomena leave administrators many problems to be solved in order to improve the habitability of Sapporo City.

Table 7. Changes in Average Age

(Oct.1)	
Year	Average Age (YRS. OLD)
1955	26.0
1960	27.7
1965	28.4
1970	29.4
1975	30.3
1980	31.2

Source: Population and Housing of Sapporo, 1981.

Table 8. Comparison of Average Age in Eleven Large Cities
in Japan

(Oct. 1, 1975)

City	Average Age (YRS. OLD)
NATIONAL	32.5
HOKKAIDO	32.0
Sapporo	30.3
Tokyo	32.0
Kawasaki	29.6
Yokohama	30.3
Nagoya	31.3
Kyoto	33.0
Osaka	32.8
Kobe	32.6
Hiroshima	31.1
Kitakyushu	32.4
Fukuoka	30.8

Source: Population and Housing of Sapporo, 1981.

III. Research Methods and Results on Habitability in Sapporo

1. Research Methods

First, 33 (out of 172) census tracts were selected. Among three hundred and sixty thousand residents within 33 census tracts, 12,000 subjects whose ages were over 18 were randomly chosen by proportionate sampling. From June of 1981, those subjects were interviewed by mailed survey. Finally, a reply rate of 64.6 percent (7,608) was attained.

2. Results

A part of results of this survey is presented in Tables 9-10 and Figures 9-13.

IV. Findings and Suggestions

As mentioned in the first section, this research was aimed at a measurement of habitability in Sapporo City. From the data of this research, the findings can be summarized into the following points:

- (1) In the case of Sapporo City with a variety of content in quantity and quality, its habitability must be evaluated from two viewpoints--one is from a general perspective of a citizen of Sapporo and the other is at the individual level based on one's experiences in a specific social district. The survey results indicated differences in the habitability evaluations as divided by those two major levels of criteria.
- (2) Among the factors determining the residents' habitability evaluation, was a certain invisible community atmosphere including such things as social activities, human relationships among citizens and local history and traditions. These factors as well as the natural environment of the district itself and the various man-made facilities all seemed to influence these evaluations.
- (3) Since housing conditions tend to be one of the crucial determinants of habitability, especially in cities such as

Table 9. List of Total Evaluations by Each District

DISTRICT	ITEMS FOR EVALUATION																																			
	Fire protection system		Traffic safety		Criminal prevention and public security		Number of streetlights		Public transportation system		Noise and quake prevention		Garbage collection and disposal		Sunlight and ventilation condition		Amount of tree-lined streets		Space for removing snow		Facilities for public meetings		Festivals, recreation and sports meetings		Opportunities for adult education		Facilities and equipment of high school		Facilities for sports activities		Public parks and squares		Prevention program of juvenile delinquency		AVERAGE	
5. Hosui, Nishi-osei	D	B	F	C	C	C	E	F	F	E	E	F	F	E	F	F	E	E	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
13. Kosai, Akebono	A	A	A	B	B	C	C	D	B	D	D	E	C	D	D	C	D	D	C	B	C	D	A	C	C	C	C	C	C	C	C	C	C	C	C	C
17. Kita/Minami Maruyama	C	A	A	A	B	D	C	E	C	D	D	C	D	D	C	D	D	C	D	C	C	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C
18. Miyono-mori	D	A	A	C	A	B	A	C	A	C	A	C	F	E	D	B	B	A	B	A	A	A	D	B	C	C	C	C	C	C	C	C	C	C	C	C
29. Kohoku	B	A	B	C	A	F	F	F	E	F	E	E	E	C	D	D	C	D	D	C	D	F	F	D	D	D	D	D	D	D	D	D	D	D	D	D
32. Kita	D	C	C	C	C	E	F	F	E	F	D	F	D	D	D	E	F	D	D	E	F	D	E	F	D	E	F	D	E	F	D	E	F	D	E	
33. Asabu-minami	D	C	C	C	A	E	F	F	F	F	E	F	F	D	D	F	D	D	F	D	D	E	F	D	E	F	F	B	E	F	D	E	F	D	E	
34. Asabu	E	C	D	A	A	E	D	D	C	E	D	E	D	F	E	D	F	E	D	F	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	
39. Shinkotoni	E	E	E	F	C	D	D	D	F	D	C	D	E	B	D	D	F	D	D	D	F	D	F	D	D	F	D	F	D	F	D	F	D	F	D	
43. Tonden	C	D	A	B	E	C	F	A	A	D	D	A	B	B	B	B	B	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
51. Himawari Danchi	F	F	E	D	F	C	F	A	D	D	A	A	D	C	D	C	D	D	B	D	D	C	D	B	D	D	D	D	D	D	D	D	D	D	D	D
58. Motomachi	A	B	C	B	C	C	B	D	E	F	D	E	E	D	E	C	D	E	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
64. Sakaemachi	D	D	D	C	D	E	B	E	F	E	A	E	F	C	E	D	E	C	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D
67. Higashi Naebo	D	F	C	E	F	D	C	C	E	D	B	D	E	D	F	D	C	D	F	D	E	D	F	D	C	D	C	D	C	D	C	D	C	D	C	D
71. Kikusui	D	B	E	D	A	E	F	F	F	E	F	F	F	E	F	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F
74. Higashi-Sapporo	C	B	C	C	A	D	E	E	D	D	B	A	C	E	D	C	B	C	E	D	C	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C
85. Kitago	C	C	E	C	E	E	D	C	E	C	A	A	B	C	D	D	C	C	C	D	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
96. Momoi-Dai	A	A	C	A	F	A	A	B	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
99. Atsubetsu-Nishi	F	F	E	F	E	D	C	C	C	A	D	A	C	F	C	B	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
107. Hiragishi	D	C	A	D	C	D	F	E	D	D	D	D	C	E	C	C	D	D	C	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
111. Tsukisamu-Higashi	D	C	D	C	E	D	D	E	E	D	F	D	E	B	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
112. Nishioka	D	E	C	D	D	B	A	B	C	E	C	C	B	D	C	B	D	C	B	D	C	B	C	B	C	B	C	B	C	B	C	B	C	B	C	B
114. Higashi-Tsukisamu	E	F	E	D	D	D	C	B	C	B	B	F	E	C	E	C	E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
120. Kiyota	F	F	E	E	F	D	D	B	C	B	D	B	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
128. Kawasoi	D	D	C	C	C	D	C	B	B	C	E	D	E	D	C	E	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
133. Sumikawa	C	E	C	E	A	C	D	D	D	C	C	B	C	D	D	C	C	D	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
136. Makomanai-Kami	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
137. Makomanai-Higashi	A	A	A	B	A	B	B	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
143. Fujino	F	E	C	F	E	A	C	A	A	C	C	E	E	F	E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
157. Hassamu	D	D	F	E	D	E	E	D	E	D	B	D	F	F	E	E	F	E	E	F	E	E	F	E	E	F	E	E	F	E	E	F	E	E	F	E
153. Kotoni	D	D	F	E	A	D	F	F	E	F	D	D	A	C	C	E	D	D	C	C	E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
169. Teineyamaguchi	F	E	F	D	F	B	B	A	C	C	E	C	E	B	A	C	F	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
160. Nishino	C	D	C	D	D	B	B	B	B	C	B	C	C	C	D	E	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

Table 10. Evaluation of Habitability, Past and Future,
by District

FIVE YEARS FROM NOW

COMPARISON
WITH
FIVE YEARS AGO

	A (Over 4.0)	B (3.99-3.5)	C (3.49-3.0)	D (2.99 or less)
A (Over 4.0)	99 A - A	49 43 67 99 10 12 15 A - B	33 A - C	24 A - D
B (3.99-3.5)	51 B - A	53 64 10 12 14 15 B - B	16 52 71 74 65 10 11 13 19 B - C	15 B - D
C (3.49-3.0)	C - A	C - B	17 23 15 15 C - C	9 13 C - D
D (2.99 or less)	D - A	D - B	D - C	D - D

Figure 9. The Reasons for Being Attracted by Sapporo
(multiple choice up to 3 per respondent)

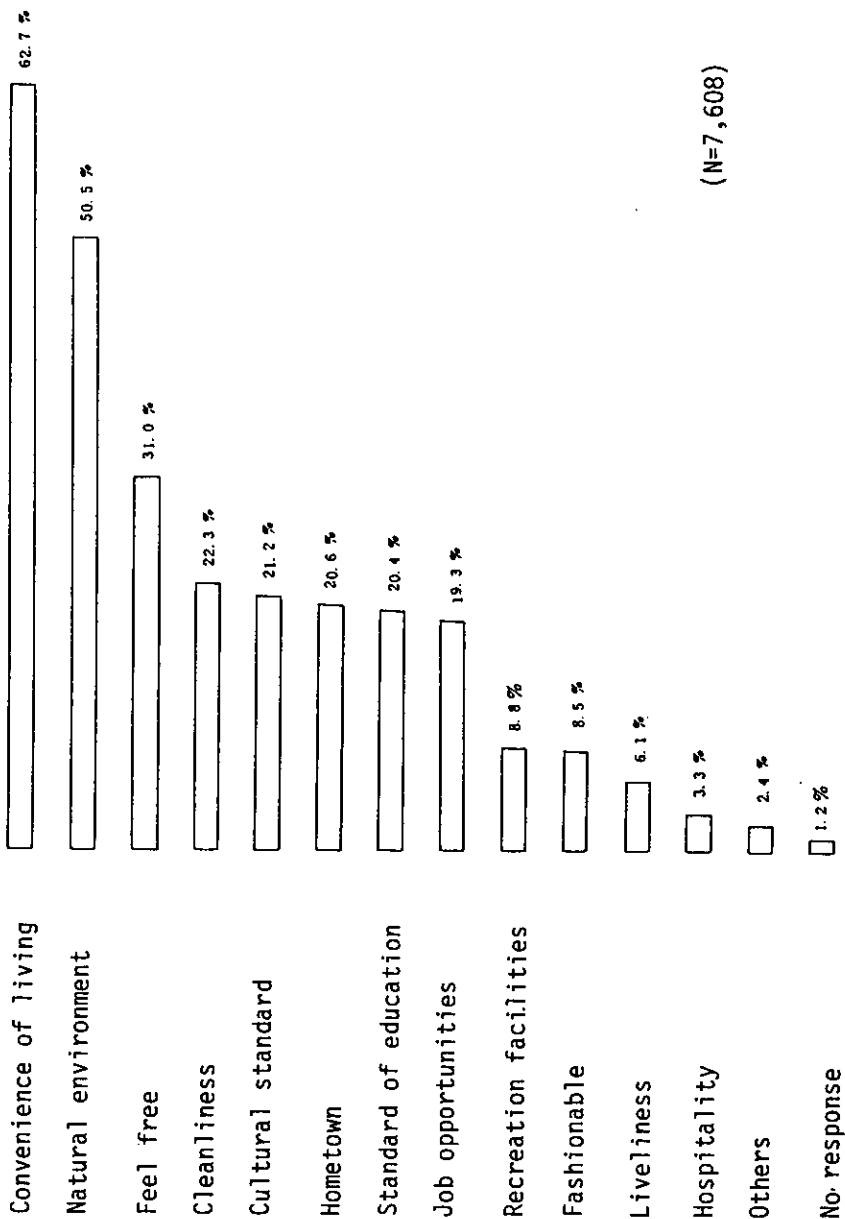
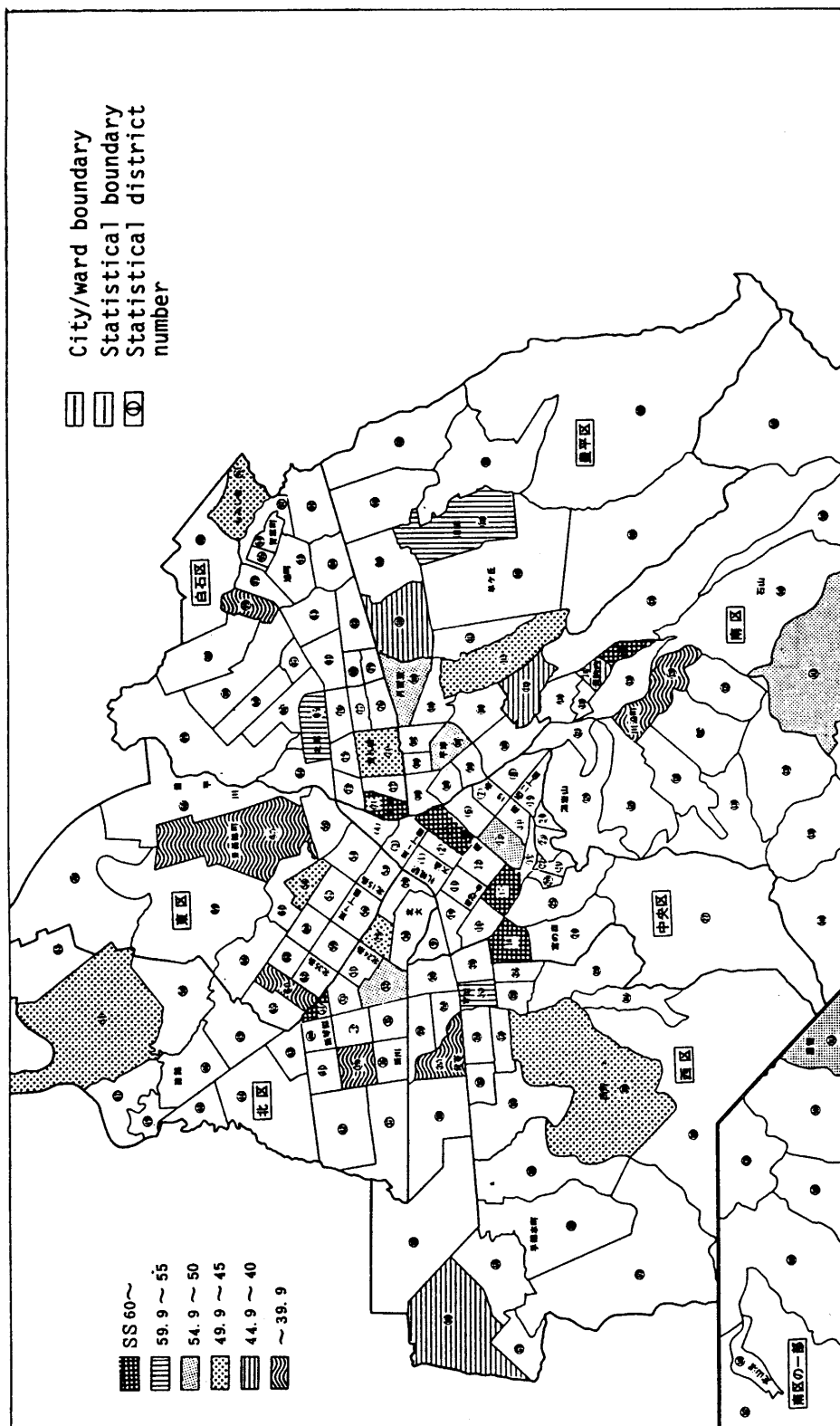


Figure 10. Habitability Evaluation toward Residential Area



City/ward boundary
Statistical boundary
Statistical district
number

SS 60 ~
55 ~ 59.9
50 ~ 54.9
45 ~ 49.9
40 ~ 44.9
~ 39.9

A
B
C
D
E
F

Figure 12. Prediction of Habitability after Five years (relative evaluation)

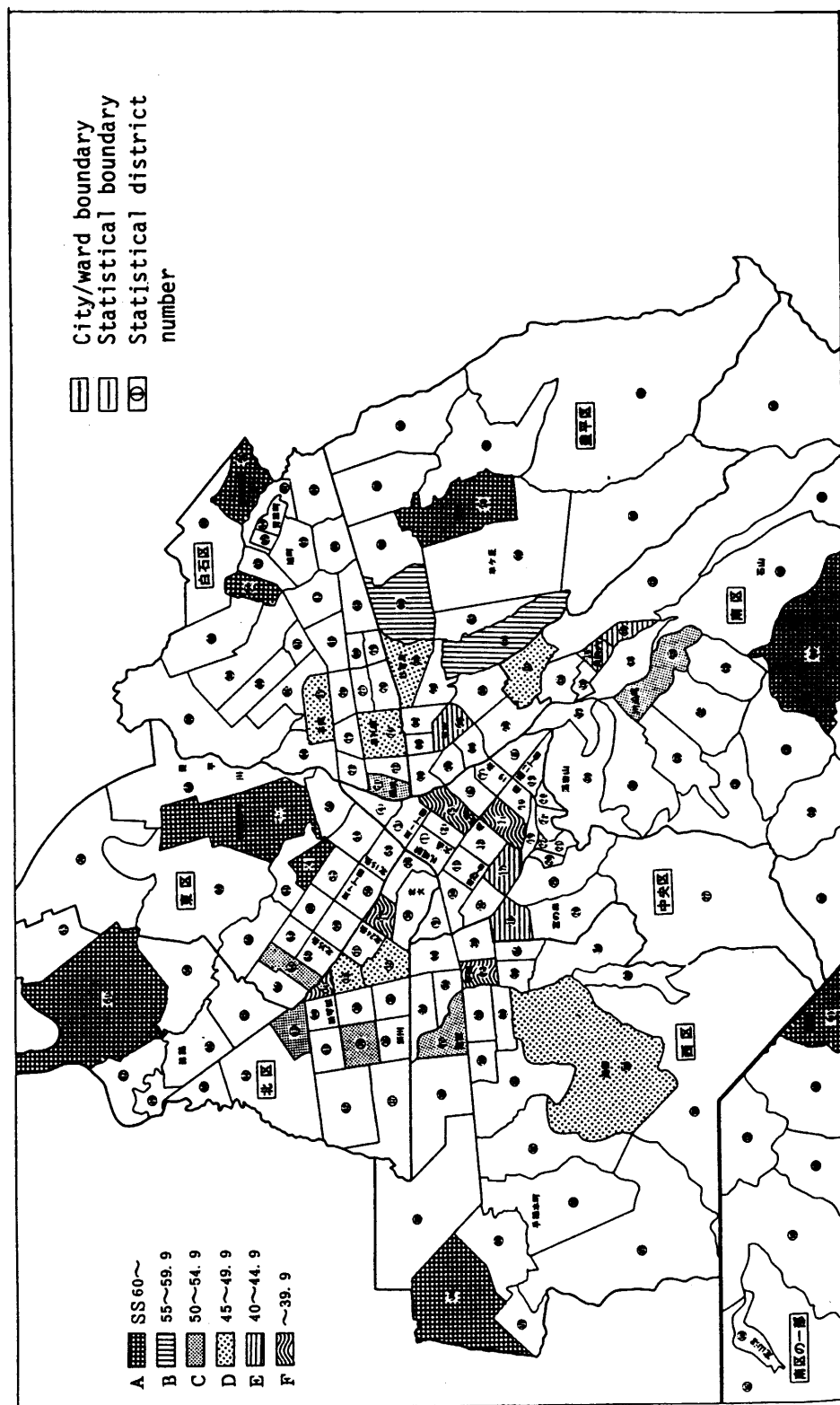
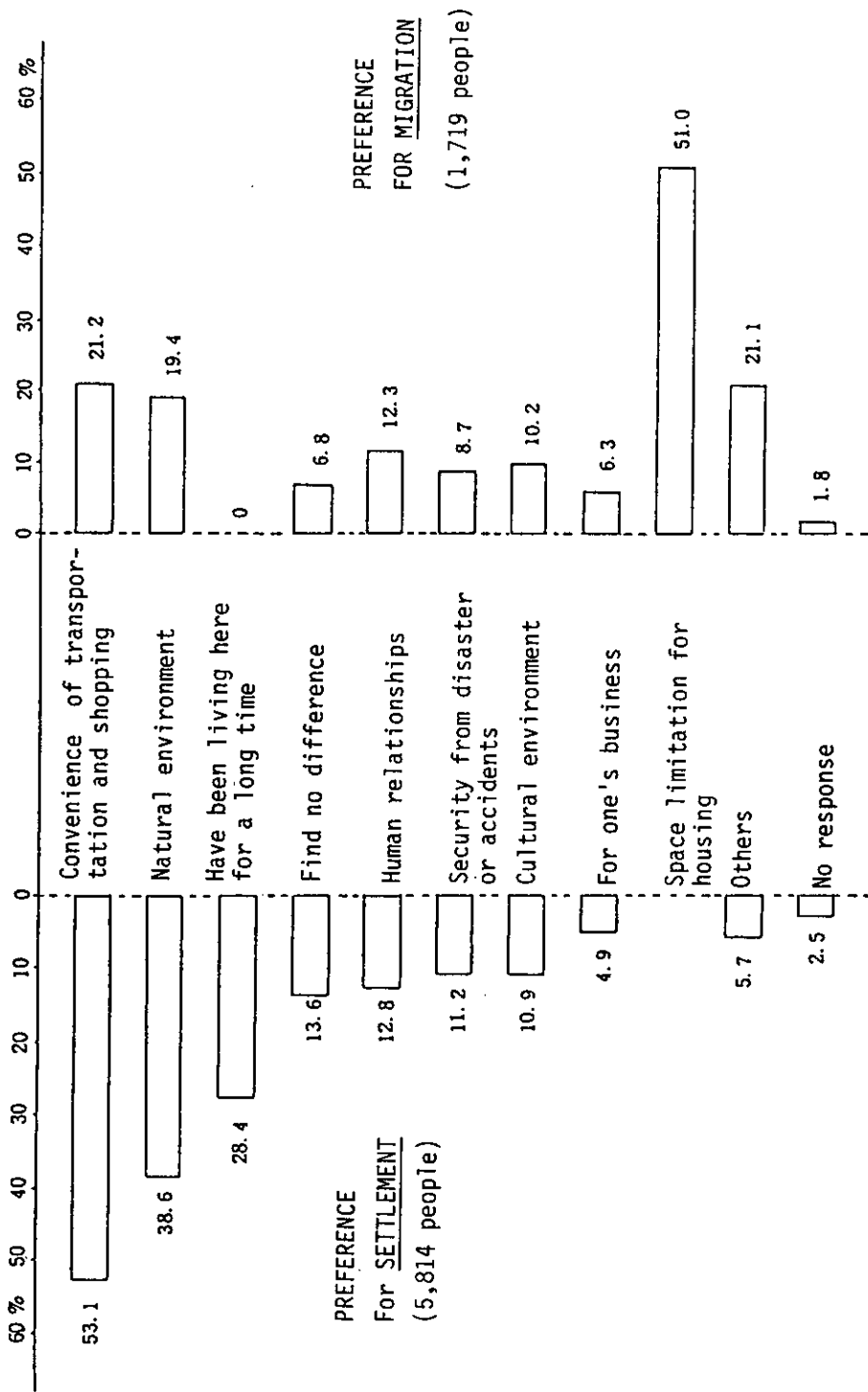


Figure 13. Reasons of Preference for Settlement in Migration to Sapporo (multiple choice up to 2 per respondent)



Sapporo, where remarkable social increase has been continuing for a long period of time--this aspect was dealt with repeatedly throughout the research. Not only the ownership of housing and dwelling size, but also the floor number of floors in a multistory apartment building were found to be important factors among families with children.

- (4) Concerning Sapporo's attractiveness, a variety of replies (which differed depending upon the people the people's sex, age, occupation or residential area), were: convenience for various living activities, anonymity, high job opportunities, high educational and cultural standards, solidarity among citizens and scenic urban landscapes.
- (5) Residents' evaluations of attractiveness and habitability tend to vary widely in cities with rapid social changes such as Sapporo. Thus it is important for the municipal administrators to make efforts to further improve current conditions.

Although as a general image, 54 percent of the respondents agreed with the statement that "the habitability of Sapporo has improved in the last five years," in contrast with 11 percent of the subjects who replied that it is "getting worse," this result does not satisfy the administrators. Despite Sapporo City's generally positive image, various areas of discontent can be found if we look closely at the responses from each district. 48 percent of the residents predicted that "habitability would be improved in five years," 16 percent answered "it would get worse" and 32 percent replied there would be no change." This fact must be carefully examined. Citizens seem to be aware enough to imagine the two coinciding possibilities--the merits and demerits--that increased urbanization will bring to their city life.

- (6) From the result regarding the changes in the habitability evaluation for ten years (including the past five years and five years in the future), all social districts were categorized into the following four types--social districts with (a) constant shifts of habitability, (b) rapid shifts of habitability, (c) moderately shifting habitability and

(d) stagnating habitability.

- (7) In relation to these models, people's preferences toward settlement or migration was also surveyed in this research. (A part of the findings is shown in Figure 13.)

An interesting fact is that even among the people who preferred to remain settled in Sapporo, one third of them mentioned some possibility of moving in the future for various reasons. Although in this survey, their reasons for moving were not recorded, Sapporo's high mobility rate as a result of business transfers may be an important factor.

However, according to our results of 1,719 respondents who indicated a preference for moving, 68.3 percent said that they wanted to move within Sapporo City, whereas 10.7 percent answered "somewhere within Hokkaido," 12.2 percent answered "somewhere outside Hokkaido," and 13.4 percent answered "unknown."

- (8) It is said that the loss of a good neighborhood and the lack of community solidarity are very typical characteristics generally seen in urban social life. However, such phenomena do not seem to be the case in Sapporo. The subjects who replied that they "never associate with neighbors" were only 5 percent, whereas 60.1 percent said they practice commodity exchange by borrowing and lending with neighbors and 93.4 percent said that they exchange greetings. This result does not support the popular view that individuals in urban life are isolated. Furthermore, the findings presented some correlations to habitability within the social district.
- (9) One step removed from neighborhood friendships, in the sphere of social activity, people's participation in social organizations (such as a municipal co-operative groups or block associations), varied in each social district. A relatively higher willingness to participate in future social activities was found among the younger generation and the residents who have been living in the current place of residence less than five years.
- (10) Social awareness and degree of interest toward one's local area appeared in the citizens' daily lives at home as they

are the core of people's daily routines. Some degree of this is seen in the people's acceptance or rejection of local tradition and customs, and in people's positive claims or expectations toward the municipal government.

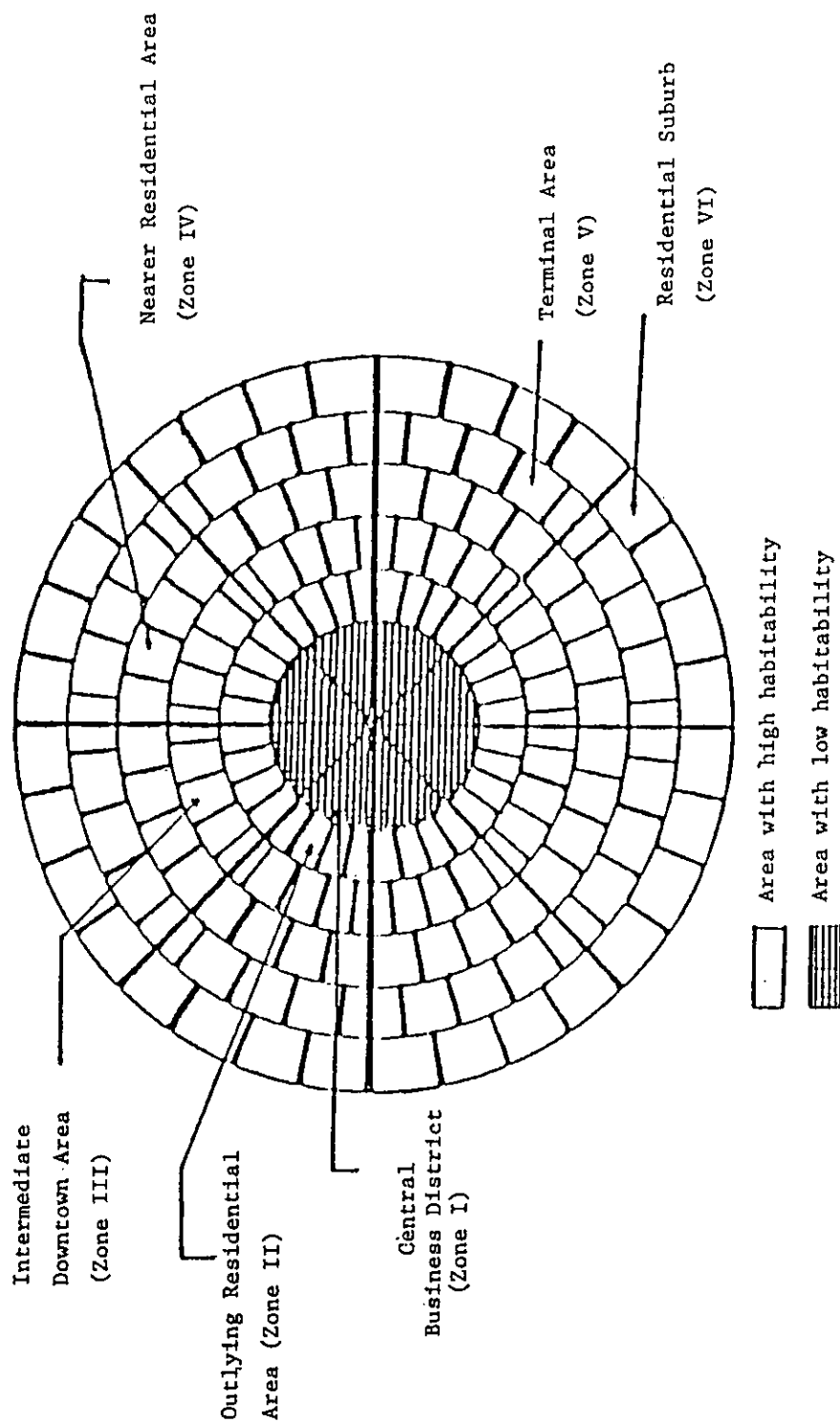
- (11) With a careful examination of the research findings summarized above, the "Wheel-type model," (in Figure 14) was created in order to measure the degree of habitability in the city. This model was developed from Figure 11 by integrating the evaluations of living conditions within each area. The difference in habitability in each district was found to be deeply correlated with the ecological characteristics of Sapporo City shaping a single-cored concentric circle with so-called comfortable and uncomfortable districts existing within the circle. The blackened section indicates areas with low habitability while the white portion shows areas with high habitability.

The core zone is the Central Business District (Zone I) surrounded by the outlying Residential Area (Zone II) in which an established city area exists. In Zone II, the areas with high habitability is a considerably well-ordered or convenient area in which people can easily have access to the facilities in the Central Business District (number 17 and 13 in Figure 10). On the other hand, the area with low habitability in Zone II is the area in which people cannot enjoy the functional merits of urban life. In this area, downtown and residential areas are mixed and people are annoyed with traffic noise, the vibration of cars and exhaust fumes due to the concentration of public transportation systems toward the center of the city (Areas 71 and 29).

Zone III is the Intermediate Downtown Area. The founding of this area took place early in the history of the city. However, while the city itself was developing, there emerged an imbalance between a well-urbanized area (area 58, 108 and 133) and an undeveloped area with low living conditions (area 32, 85 and 157) due to rapid population increase.

The next zone is the Nearer Residential Area (Zone IV). In this zone, two types of areas coexist: (1) the residential area developed from the early stages with a stable living condition owing to the gradual environmental arrangement, (2) the area where an

Figure 14. "Wheel-type" Model for Measuring Habitability



unbalanced development occurs between old-style streets and newly-developed streets, due to overpopulation from the rapid population inflow. For the first area which has relatively higher habitability, area 18 and 112 are shown, and area 39 and 67 can be presented as an example of a low-evaluated area. These examples indicate that even within the same zone, some areas have higher, and some lower habitability.

The next outlying zone is named the Terminal Area (Zone V). High habitability areas (such as area 136 and 137) and low habitability areas (area 153 and 111) also exist here. We named the last outer area the "Residential Suburb Area" (Zone VI). It also includes both highly evaluated areas such as planned housing developments and new residential areas (area 96 and 43) and poorly evaluated areas (area 51 and 169).

In sum, the central area of this model is the planned city center in which business concentration areas and government and municipal offices have been located since Sapporo City's beginning in 1869. This area, which is filled with commuters during the daytime, is empty in the evening. From this central zone as a core, the model moves outward in circles. These are named the Outlying Residential Area, the *Intermediate Downtown* area, the *Nearer Residential Area*, the Terminal Area, and the Residential Suburb Area. The black and white check on this circle represents an area where some low habitability and some high habitability characteristics are mixed. The second zone located close to the central district has considerably many higher habitability areas since its location makes it easier to enjoy the convenience of accessing the facilities of the central zone. On the other hand, the other zones have both areas. Since some of the areas are urbanized with careful city planning and some are urbanized with a lack of habitability improvement, both areas are found in these zones. The radiating line between the center and suburban districts indicates the terminal zone facing the public transportation systems for the commuters. The road networks along this circle have been constructed gradually. The convenience of these public transportation systems will help to increase the habitability evaluation. But on the other hand, the areas in which the residents are more concerned about traffic pollution indicates a low habitability evaluation. Such conditions are also represented in this model.

The model in Figure 14 is named the "axis-model for measuring the habitability of the city." This model can be useful as a measuring base for single-core shaped cities. In Sapporo City, a newly emerging city sub-center has not been established. Rather, it expanded from the planned city center into the suburbs by rapid population growth due to social increase and annexation of villages and towns after World War II. From this point, the selection of Sapporo City seems to be appropriate in terms of the presentation of such model for habitability measurement according to resident opinion.

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