■Urban Spatial Structure

Employment Centers in the Seoul Metropolitan Area

Kim, Jin-Yoo & Jun, Myung-Jin

This study aims to identify employment centers in the SMA for 1994 and 2003 and to examine the dynamics of urban spatial structure. We have identified 5 centers in 1994 and 6 centers in 2003 by using Z-score and non-linear least square method. The findings can be summarized as follows: 1) The SMA has experienced significant changes in urban spatial structure, with a newly emerging sub center of Anyang over the 1994-2003 period; 2) The CBD, Gangnam, and Jamsil have steeper gradients in 2003 than those of 1994, indicating that those centers have clearer boundaries of dominance over the surrounding areas; 3) All centers inside Seoul (CBD, Gangnam, Youngdungpo, and Gamsil) specialized in FIRE, while centers outside Seoul (Bucheon and Anyang) specialized in manufacturing, indicating that centers inside and outside Seoul play different roles for urban economy; and 4) the LQ analysis shows that the role of the CBD in provision of high-order services such as FIRE has shifted into sub centers such as Gangnam and Youngdungpo during the last decade.

Changing Commuting Trends after the High-Growth Period in Japan: A Case of the Tokyo Metropolitan Area

So-Hee Lee, Tsutomu SUZUKI,
& Myeong-Hun Lee

The purpose of this study is to investigate the dynamic changes of the commuting trends in the Tokyo Metropolitan Area (TMA) for the period of 1965-2000. In particular, this study aims to reveal the changes in commuting distance and patterns as time goes by.

The analysis of this study is divided into two parts. First, we consider general changes in commuting. In this perspective, we examine changes in the number of workers, average commuting distance, the proportion of inward and outward-bound commuters, and commuting distance by concentric rings. Second, we consider about changes in the commuting distance by jurisdiction.

As a result, we found noticeable trends for the last 35 years. Commuting trends in TMA are classified by three time periods. First, the period of 1965-1980 was shown the scope of commuting was expanding out. For this reason, the number of workers and average commuting distance was gradually increased. Second, the period of 1980-1990 was mainly affected by the bubble economy. Generally, a high increasing tendency was shown. Third, the period of 1990-2000 was turning point to reducing the proportion of increasing as well as it showed the decreasing in the number of workers in 2000.

Optimal Job-Housing Location Pattern in Several Japanese Cities: Considering Modal Split and Congestion in Network

Takuya MARUYAMA & Noboru HARATA

Urban form is described by the geographical distributions of workplaces and residential sites and these distributions are one main factor describing transport situation in the area. In this context, considering optimal job-housing location problem gives some interesting and valuable insight for urban transportation planning. Several studies have analyzed this optimal job-housing location pattern problem in real urban areas but these studies assume

that travel time is constant. In order to alleviate this assumption Maruyama and Harata (2003) propose a rigid model to consider the change of travel time by job-housing reallocation with network equilibrium approach. However their work has still some issues to be considered. One issue

is that they don't consider the modal shift by job-housing reallocation and second issue is that their application is limited to only one city.

Therefore this paper intends to extend the work by Maruyama and Harata (2003) in two directions. One is that we formulate optimal job-housing allocation problem considering modal split and congestion in network. This problem can be bi-level problem but we formulate a single-level problem, which is easier to be solved and has applicability to real urban area. This contribution is rigidly theoretical one. Second contribution is that we apply the optimal job-housing allocation problem to three Japanese

cities; Tokyo, Utsunomiya and Okinawa, and show how much optimal job-housing reallocation reduce total travel time, vehicle kilometer traveled, and CO2 emissions in these three cities. By the optimal reallocation, these transport and environment indices are reduced substantially by 30-40% in every three city.

Study on Methods for Analyzing User Needs

Chigako YAMAMOTO & Keiichi SATO

Customer Satisfaction (CS) portfolio analysis is widely used for market research and public service evaluation. Using an overseas tourist survey conducted at the Niseko Hirafu ski resort in Hokkaido, Japan, as an example, this study identifies an item that could not be properly evaluated by CS Portfolio Analysis. The tourist survey consists of two parts: (1) a survey on the importance of factors in choosing an overseas holiday destination and on satisfaction with Niseko as such a destination, and (2) descriptive open-ended questions on experiences of inconvenience in Niseko and on suggestions to make Niseko more appealing as ski resort destination. The former was analyzed by CS Portfolio Analysis, and the latter was analyzed by keyword analysis and an affinity method. According to CS Portfolio Analysis, English signage and information provision does not require improvement. According to keyword analysis, however, that item is important and urgently needs to be addressed. This discrepancy suggests that a reliance only on CS Portfolio can lead to a misreading of user needs.

Issues on the Urbanization and the Urban Structure Development -From the View Point of the Employment Structure

Tzen-Ying Jenny Ling & Cheng Ching-Tzu

Urban growth depends on mostly interrelated factors, such as the improvement of population's well being and the promotion of economic and social policies that may provide employment opportunity and suitable living environment for the population. As such, urbanization process is the critical spatial dynamic in the production and management in the positive regional growth and the employment opportunity to keep up with the size and aptitudes of the labor force as resources. Issues that influence the quality and mobility of the productive resources-including labor, capital and land as well as education will eventually contribute to the shift and share of the urban and industry structure.

This study identifies Taipei City's labor force from 1991 to 2001 census in comparison to cities in the Taiwan's urban system, recognizing issues risen from the impact of rapid urbanization in the urban structure development from the various sectors agglomeration. The ramification means that the local governments will need to face two major issues--the need re-examine the management policy for land and industry development and the need to provide the needed public facilities and services for the new employment population structure. Therefore, this paper suggests that suitable industry development policy along with proper urban planning tools are two important factors that will enhance the urban structure development in Taipei City as compared to the national structure. It is clear that the appropriate balance may provide policy makers a direction and alternatives for the future urban growth in Taipei City and it's

proper.

Impact Factors Analysis of Seoul Metropolitan Area Regional Growth

Ho-Jin Jung, Il-Yong Park, & Hong-Kyu Kim

There exists a regional gap among Ganganam-gu so called Gangnam, Seocho-gu, Songpa-gu, and other autonomous regions in Seoul. The researcher intends to classify factors that effect regional development of each autonomous region into physical, economical, social-cultural factors and find out which factors have effects on regional development of each autonomous region. Twenty five autonomous regions of Seoul metropolitan area are subjects of this research.

The researcher selected 11 variables as the factors that effect the growth and then did factor analysis of these 11 variables with their data from 1996 to 2003. The researcher extracted three factors that have more than eigen value of one through factor analysis. These factors are physical, economical, social-cultural factors. The effects each factor has on regional growth are analyzed with stepwise multi-regression analysis. The researcher used three factor scores, physical, economical, social-cultural factors of each region as independent variables and local tax paid amount per person of each region as dependent variable.

As the result, it became clear that out of 25 autonomous regions of Seoul metropolitan area, economical factors with five regions, physical factors with 13 regions and social-cultural factors with seven regions have more significant effect on growth than other factors in each region.

Accessibility to Community Facilities Considering Topographical Features and Changes in Physical Strength by the Age of Residents

Eiji SATOH & Tohru YOSHIKAWA

This paper developed a method to measure accessibility of residents to community facilities. The purpose was to assess the potential for the rearrangement of the public facilities according to the change in demographic structure. In order to take the movement of the actual residents to the facilities into account, this paper formulated an index of accessibility with topographical features and difference in walking speed by the age. By using this index, the numbers of residents who cannot access the facilities was calculated from the current and projected population. The proposed method consists of four steps. First, the shortest route from each dwelling buildings to the community facility is determined by using geographical information system. Second, the conversion distance, an index of accessibility, is formulated to define the walking resistance put on the pedestrians caused by topographical conditions. Third, the modified conversion distance is calculated from the conversion distance in order to take the difference in walking speed into account. Fourth, based on the modified conversion distance, the region where residents cannot access the facilities is determined.

The method was applied to Tama New Town which is the early development area in Tama City of Tokyo Metropolis. The result showed that the average converted distance was increased by 5.1 percent compared to the horizontal route distance in the target area. This was caused by ups and downs along the routes. Moreover, the result of analysis by change in walking condition according to the age showed that the number of residents who cannot access the facilities will increase up to five times in year 2025 of that

in year 2005. This suggests that the topographical features and changes in physical strength by the age of the residents must be taken as considerable and urgent factors for the rearrangement planning of the facilities.

A Study on Common Spaces in Urban Redevelopment of the Hillside High Density

Areas in Busan, Korea

CHO Pilkyu, Masanori SAWAKI, Kunihiro NARUMI,
& Eriko OKA

The aim of this research is to acquire fundamental knowledge on common spaces, by the observation of neighborhood behavior of local residents in hillside high-density areas of Dong-Gu Busan, Korea.

From this research, two main problems were identified as follows: 1) Residents who live in areas which were redeveloped under the on-the-spot improvement program are requiring facilities such as pocket parks and community gardens for the elderly; 2) Residents living in the area redeveloped under the apartment house construction program are requiring more green spaces. Neighborhood behavior of the local residents has been ignored because of the development-centered construction program in Korea.

However, it is necessary to give careful consideration to the characteristics of the local community and common spaces before implementing residential environment improvement projects in hillside high-density areas.

Effects of New Housing Development on Suburbanization -Tainan Metropolis Case Study

Yung-Lung Lee, Kan-Chung Huang, & Yu-Ling Hsu

Suburbanization of population will cause downtown area decay and new housing demand In suburb area. Most population migration researches relate to the housing choice behavior but little to the housing developers. This study aims to develop a model describing the influential factors of developers on population distribution in Tainan Metropolis. Firstly the characteristics of new housing supply in past decade are displayed with functions of Geographic Information System. Therefore a multiple regression model of new housing supply is estimated for explaining the developers' behaviors. The final results will show the effects of new housing development on suburbanization.

The Effect of Building Types on the Distribution of Suspended Particles PM 10 in Urban Areas

Huang Chih-Hong & Tsai Fong-mau

Suspended particles PMIO have become the biggest air pollution index of urban air quality. It is also a dangerous pollutant for human health. The distribution of the PM 10 shows an extreme uneven situation in campus. Suspended particles in the urban areas would be mostly removed by air draft in the urban wind field. The wind field is subject to urban block types, the building structures, the urban streets, the open space etc. This study would judge how the urban building types effect the particle distribution.

The study is based on the empirical observation and simulation software. Urban block types in a school campus for an object would be chosen in Taipei. Its distribution would be measured and be put into the database for the simulation of suspended particles in different urban blocks types. The CFD simulation software "Flovent5.1" would be applied for the comparison with three kinds of different types changing as simulated improvement measures on the distribution of suspended particles.

The result of the study shows that the building types changing does effect the distribution of suspended particles PMIO in Urban Areas enormously. The simulation results demonstrate as following:

The air draft plan of the first floor reduces the PMI0 concentration 67.5%, adds the wind speed 0.04 m/s and affects surrounding environment up to 10 meters by distance. The concentration of building structure reduces the PM 10 concentration 16.7%. The bridge-connected building structure reduces the PMI0 concentration 17.2%.