■Urban Transportation

The Impact of the Development of High Mobility Transportation Networks on Rural Cities, Related Problems and Countermeasures

Akio KONDO, Yoshitaka AOYAMA & Yoshinobu HIROSE

Due to the reduction of travel time between regions in recent years by the development of transportation networks in Japan, the opportunities for anyone living in both urban and rural areas to meet people and to use urban facilities have increased. However, the various functions of smaller cities will be absorbed into these larger metropolises, since the sphere of urban influence from big cities spreads to greater areas. In these backgrounds, the impacts of developments of expressway networks are analyzed by using the increment in interchangeable population and the changes in trade and recreation areas. Problems rural cities will have to bear in the near future are also discussed. It can be said that one result of this is the sphere of urban influence from big cities will spread to the retailing industry in rural areas in the near future. In order to utilize the expressway improvements effectively in rural cities, new and creative development policies are required which are dissimilar to those of major cities.

Observation on the Characteristics of Converted Traffic, Viewd from the Available Forms of Urban Expressways

Tadaomi SETOGUCHI

In this study, the author analyzed the influence of network extension and the revised toll on the traffic of urban expressways in Fukuoka, Kita-Kyushu, and Nagoya, and, in estimating the traffic of these urban expressways, based on their maintenance and management, the author of this paper straightened out the relationships between the toll, a factor that determines the conversion amount of traffic, and the value of time to examine what traffic allocation calculations ought to be at a practical application level.

A Method for Determining the Groups of Road Sections to Be Simultaneously Constructed and the Priority between Them by Considering the Priority and Simultaneity of Road Construction

Hiroshi TANOUE, Takashi CHISHAKI, Masaru KIYOTA
& Chikashi DEGUCHI

In this paper, a method is proposed to determine the groups of road sections to be simultaneously constructed and the priority between them, considering the disutility of road construction and the priority and simultaneity of construction between road sections. Dynamic programming is utilized for an optimization procedure. The mathematical modeling of the problem and its solution technique are emphasized. An example problem is included and illustrated for showing the applicability of the model. The results indicate that the proposed method is useful for multi-stage determination problem such as in the road network planning.

A Method for Determining the Priority Order of Road Improvement Considering the

Impact of Increasing Trip Generation

Ab Samad Talib, Masaru KIYOTA & Chikashi DEGUCHI

This paper describes a method used to determine a plan for improving a road network taking into consideration the impact of increasing number of trip generation. In this method, the increasing number of trip generation in study area is distributed to other unflourished residential zones, and the groups of road segments to be simultaneously constructed as well as their priority are determined so that the limited budget will be effectively used The dynamic programming is utilized for the optimization procedure. Details of the mathematical modeling and solution technique are shown. An example problem is included to illustrate the applicability of the model. The results indicate that the proposed method is useful for the multi-stage determination problem such as the road network planning.

The Developing Trend of Taxi Traffic in Beijing Metropolitan Region

Zhongying Dong, Takeshi CHISHAKI, Guoquan Li
& Wen-Chih Huang

In the recent years, with the development of social economy in China, the public urban transportation has greatly changed. In Beijing city, taxi traffic system has become a new kind of public transit means for resident trips. This paper consists of three parts. The first introduces the development history of taxi traffic system of Beijing city, which includes three stages of taxi service trades from original to now. Through the introduction, the historical reasons that taxi traffic development of Beijing city is increasingly expanding can be known. The second part analyses the interior and exterior circumstances and impact factors of taxi traffic system, and describes the improvement of relative traffic installation and the change of transportation policy of Beijing city. Further, we preliminarily study the developing strategies of Beijing taxi traffic system through the discussion on the change of passenger flow and the estimation of corresponding factors, and comparison with other big cities such as Taipei, Mexico city etc.

A Study on the Development Plan of the New Yong-Jong Island International Airport

Young-Hwan Lee

The new Young-Jong island international airport(NYIA) and the related hinder land development is expected to be a catalyzer which stimulates even further Korea's economic power and participation of a global market. The basis of the development plan is characterized by following aspects: backup for the Northeast Asian hub due to the globalization trends, urgency of the social overhead capital building, rapid increasing of aviation demand and shortage of the existing facilities. According to this basis, the plan includes international business center, community development and fre trade zone. The main impacts of NYIA plan can be separated into the reinforcement of international competitiveness, the boosting of regional development and the opening of a window on cultural exchange. Also, it is necessary to participate the private sectors and to control different opinions within various government departments.

A Comparative Study on the Road Networks of Pre-modern Cities by Using the Transition Matrix of the Pedestrian Flow Model

Shigeyuki KUROSE, Satoshi HAGISHIMA, Takeshi SAKAI
& Koji OHSHIMA

The purpose of this paper is to propose and test a method for comparing the road networks from the view point of

pedestrian flow. The method is based on a pedestrian flow model. In the model, Pij the possibility for a pedestrian moving from node i to node j is expressed by the following equation:

$$P_{ij} = W_j \exp(-\beta C_{ij}) / \Sigma_j W_j \exp(-\beta C_{ij})$$

where Cij is the distance between node i and j; Wj is a measure of attraction of node j; and β is the distance-delay parameter. The road networks can be compared by using the first eigenvector of transition matrix [Pij] In this application, the first eigenvectors of transition matrices [Pij] are calculated and compared among the road networks of the pre-modem cities in Europe, Middle East, and Japan. The conclusion is that the method for comparing the pedestrian road networks by using the first eigenvector of transition matrix is useful. Moreover, the common characters of the road networks of the pre-modem cities in each region are shown by this method.

Analysis on Parking Lot Choice Behavior and Prediction of Numbers of Car Using Parking Lot

Hiroshi TATSUMI, Takeshi CHISHAKI, Sang-Kwang Lee
& Ki-Young Lim

In this study, analysis on factors to choose parking lot based on AHP and prediction of numbers of car using parking lot with the help of simulation in central business district were studied. It is very unique to calculate the degree of importance of parking lot by combination of questionnaire "To which level you will use parking lot?" and paired comparison. In case of the estimation of parking cars by AHP, conventional research calculates the number of car by turnover rate (based on degree of importance) and capacity of parking lot, which is not practical in the event the parking lot is fully occupied. And one of the factors to choose parking lot would be the waiting time for parking as it varies from time to time. So a simulation was conducted.

Survey and Analysis of the Characteristics of Traffic Access and Parking at the Central Area of a Local City

Chikashi DEGUCHI, Hiroshi YOKOTA, Masaru KIYOTA
& Tetsunobu Yoshitake

This paper describes the characteristics of traffic behaviors such as traffic purposes at holidays and week days, selection of transportation modes, walking and selection of parking place to the central area of a local city. Data are obtained from response to questionnaires for people in Miyazaki City. The choice behavior of parking places is analyzed by using Aggregated Logit Model. The analyses results and answers show that it is necessary to decrease the traffic resistance on walking by such method as pedestrian and vehicular segmentation to keep traffic safe for pedestrian.

An Analysis of the Urban Parking System and Management Policy in a Regional Metropolitan City: The Case of Kwangju's CBD, Korea

Bong-Hyun Jeong

-No abstract