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An application of the UrbanSim land price model in Yongsan-gu, Seoul, Korea

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The land price model in Yongsan-gu aims to assist the development of an integrated land-use and transport model for Seoul city. The simulation software and modelling approach used is UrbanSim, which is comprised of a number of models. One of these models is the land price model. Factors that affect land prices in urban areas are analyzed, categorized and used to explain spatial differences at 150 m × 150 m grid cells in Yongsan-gu by employing a hedonic regression model. The current model is part of the data development of an UrbanSim model for Seoul city. The data preparation, estimation and modelling results are described in this working paper. This paper hopes to contribute to developing an agent-based large scale land-use and transport model in Korea and surrounding countries.

Keywords: UrbanSim; untegrated land-use and transport models; hedonic regression model

Introduction

Research motivation and background

Urban growth is inevitable as a result of the rapid growth of the world population (Masser, 2001), economic progress and breakthroughs in technology. Thus far, more than half of the world's human population (3.3 billion) live in urban areas and this scale is expected to swell to almost 5 billion by 2030 (www.citymayor, 2010). The dramatic population growth in urban areas has resulted in misuse of urban land along with urban sprawl, deterioration in the environment (Dewan and Yamaguchi, 2009), traffic congestion (Cho, 2002), improperly concentrated activities in one region and leaving a lot of waste land, shortages in urban services and major problems of urban poverty (Kaothein, 1995). This urban expansion, at the rapid rate at which it is occurring, presents a formidable challenge for urban planners and policy-makers (Masser, 2001).

To mitigate these problems, many countries have developed planning policies (Teerarojanarat, Fairbairn, and Chunithipaisan, 2004) coupled with a variety of measures that have been utilized to manage growth in fast-growing urban areas (Cho, 2002). It has been widely suggested that another tool is needed to model urban growth for forecasting future urban growth patterns. Dynamic urban land use

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