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DENSITY VERSUS SPRAWL: SPATIAL ANALYSIS OF TURKEY'S URBAN GROWTH MODEL BY SOCIO-ECONOMIC DEVELOPMENT INDEX

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Abstract

The socioeconomic development levels of cities are an important indicator of urban sustainability. Therefore, it is critical to design cities by considering their socioeconomic levels. Urban growth models may have sharp effects on the environment and land use practices, as well as on the sustainability of cities. In this study, spatial analyses are applied to socioeconomic development values, urban densities, and area sizes of the provincial centers to analyze the urban growth models in Turkey in terms of urban sprawl and compact development. The spatial distribution of the socioeconomic development values of the provinces was examined with Moran's I since the socioeconomic indicators usually include spatial autocorrelation. There is a strong positive spatial dependence between provinces. Provinces with a high socioeconomic development value are clustered in the western part of Turkey, while the provinces with lower values are clustered in the east part. Various analyses are made with the spatial lag model, spatial error model, and various weight matrices. Moran's I values were calculated as *0.636* and *0.595* according to various weight matrices applied. The most suitable model for investigated relationship is the spatial lag model with the weight matrix *(1/S³)* based on the inverse of the distance. In this model, spatial dependence coefficient (ρ) is *0.7912 (p=0.0000)* and coefficient of determination (R^2) is *0.87*. Provincial centers in Turkey are determined they show a trend for urban sprawl more than compactness among urban growth models, according to socio-economic development values. To reduce the negative effects of the urban sprawl trend in Turkey, the inadequate practices in the past and the proposed urban policies in the future are discussed.

Key words: compact development, Moran's I, socio-economic development, spatial regression models, urban sprawl

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