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Measuring and Assessing Urban Sprawl: A proposed indicator system for the city of Thessaloniki, Greece.

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## Abstract

Urban sprawl phenomenon has been on the planning research agenda for more than five decades now. In an effort to comprehend the phenomenon there have been several quantitative approaches to measure it and identify its spatial patterns. This paper attempts to develop a refined indicator system for measuring and assessing the spatial characteristics of urban sprawl in Greek cities. To do so it suggests a system of indicators adapted to the specificities of Greek cities that tend to be quite unique in terms of their urban expansion practices. At the same time, the study deals with the critical issue of data availability and for that it proposes a minimum, but sufficient subset of indicators based on free satellite imagery that could be applicable in any Greek city. Furthermore, a composite analysis using population data is attempted. The proposed indicator system is applied to the Greater Area of Thessaloniki, the second largest city in Greece that was in constant transition till the recent economic crisis. Application of methodology suggests that the proposed system of indicators can contribute to the measurement and assessment of sprawl, since the results of the indicators validate theoretical findings and recordings for urban sprawl in Thessaloniki.

## Keywords:

*urban sprawl, suburbanization, urban form, Thessaloniki*

## 1. Introduction

Urban sprawl phenomenon has been on the planning research agenda for more than five decades now, mainly through the debate in regard to the ideal form of cities and metropolitan areas. In the relevant bibliography, two main models of urban development patterns have been recorded: "compact" and "sprawled". Their difference lies mainly in building density, land use mix, and structure of the transport network. Furthermore, it seems that their environmental impact varies substantially, with urban sprawl model considered to be an extremely unsustainable way for our cities to grow (Jaret et al., 2009). To this end there are numerous studies presenting the impacts of urban sprawl based purely on quantitative approaches and several studies attempting a qualitative and maybe more objective approach (Hamidi et al., 2015). The quantitative approach is usually based on measurements of certain urban sprawl characteristics utilizing a single or a set of indicators.

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