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Urban parks: Visitors' perceptions versus spatial indicators

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ABSTRACT

Urban green spaces and their role in the quality of life of residents have been studied across multiple disciplines, based on empirical measurements or qualitative studies – however, the relation, and its strength, between spatial indicators of urban green spaces and visitors' perceptions of green spaces are less known. Addressing this knowledge deficit, the present research uses a Geographical Information System (GIS) to link subjective evaluations of the physical environment and objective spatial indicators, to examine the correlation between the perceived and objective characteristics of five urban parks in the city of Szeged, Hungary. A questionnaire survey was used to collect residents' subjective perceptions of the parks, while objective – which is to say measurable and mappable – spatially explicit indicators of the respective green spaces were calculated using GIS. The subjective evaluations of the parks were matched to the objective indicators using a multiple regression analysis. The statistical analysis yielded two moderate and two minor correlations between the human perceptions of the investigated green spaces and the nine objective environmental indicators examined. These results showed that subjective evaluations and objective data reveal different aspects of the same reality. Therefore, the recommendations from this study are to collectively use human perceptions and objective environmental indicators, both of which are fundamental for adequately capturing the role of urban green spaces in quality of life.

1. Introduction

Urban society is largely detached from the natural environment. This triggers a great demand for the services provided by urban green spaces. Urban green areas are essential contributors to human health and quality of life (Lee and Maheswaran, 2011; Maas et al., 2006), and they therefore provide a great scope for investigating the human perceptions of the physical environment. Beyond the most obvious aesthetical benefits (Chen et al., 2009; James et al., 2009) served by urban green spaces, urban green contributes to the recreation of inhabitants and to the maintenance of social cohesion (Germann-Chiari and Seeland, 2004; Kaźmierczak, 2013; Tzoulas et al., 2007). Other essential societal benefits, such as the advantageous contribution of urban green to physical and mental health, are also widely emphasised (Van Herzele and Wiedemann, 2003; Wolch et al., 2014). Urban green surfaces effectively regulate the microclimate of their surroundings (Oliveira et al., 2011; Takács et al., 2014), and substantially contribute to air purification in cities (Escobedo and Nowak, 2009). An indirect, but still essential service to human well-being is the shelter and habitat that green spaces provide for biodiversity (Fontana et al., 2011).

The human perception of the ambient environment is subjective, and differs from person to person (Hernández-Morcillo et al., 2013; Langemeyer et al., 2015); hence, the benefits derived from urban green spaces and their objective properties are interpreted individually. Therefore, the analysis of perceptual information on green spaces is challenging, although not unprecedented. For example, Baur et al. (2013) researched the public attitude about urban nature parks of Portland, USA, based on cognitive, affective and behavioural components, and on social networks. Irvine et al. (2009) analysed the soundscape of green spaces in Sheffield, UK. Jim and Chen (2006) investigated residents' perceptions of ecosystem services, and the condition and design preferences of green spaces in Guangzhou, China.

In contrast to perceived benefits, the objective indicators of urban green spaces capture well measurable and quantifiable physical attributes (Tsurumi and Managi, 2015). As their analysis is relatively straightforward compared to subjective data genres, objective indicators of green spaces are extensively researched (Bowler et al., 2010) and utilised to support urban planning (Lakes and Kim, 2012). For example, objective indicators of green spaces are applied for biodiversity preservation (Fontana et al., 2011) or microclimate regulation (Lin et al., 2015).

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Understanding residents' perceptions of the services provided by green spaces is equally important to quantitative data, and both are crucial for the assessment of quality of life. Quality of life studies have hitherto focused on either objective or subjective research, but rarely analysed the relation of the two different information domains. One of the few detailed studies using spatially explicit methods found relatively low correlations (McCrea et al., 2006). This finding corresponds with those from von Wirth et al. (2015), who identified a weak relationship between subjectively assessed

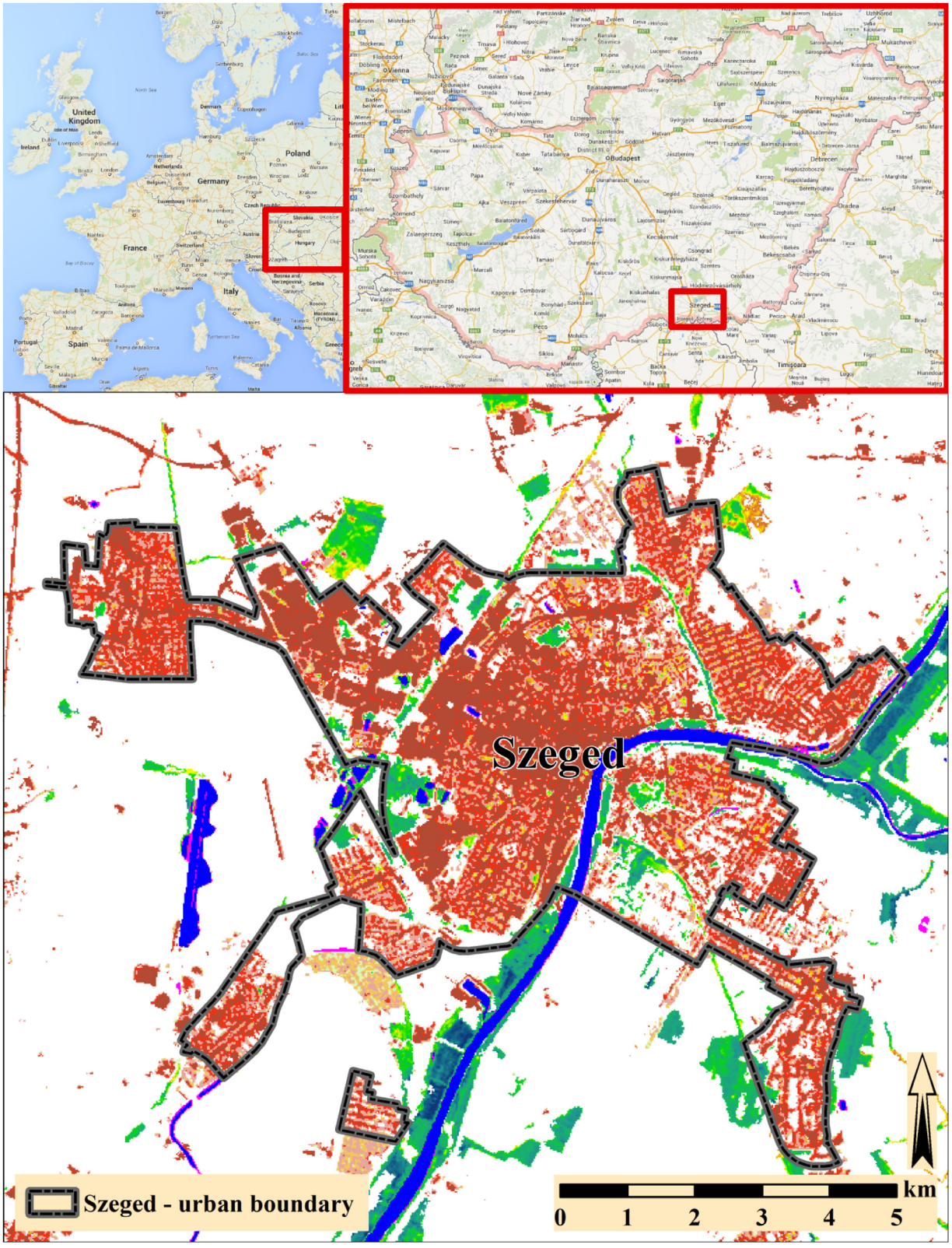

Fig. 1. Geographic location of Szeged.