2023 ILUS

INTERNATIONAL LAND USE SYMPOSIUM

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ABSTRACT BOOK

Leibniz Institute of Ecological Urban and Regional Development
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ABOUT ILUS 2023

The biennial International Land Use Symposium (ILUS) is an interdisciplinary conference with an objective to advance the Sunderstanding of built-up areas and to develop new ideas for sustainable urbanization. ILUS brings together leading international academics and interested attendees for presentation, discussion, and collaborative networking in the fields of spatial sciences, environmental studies, geography, cartography, GIScience, urban planning, architecture, which relate to investigations of settlements and infrastructure.

Under the umbrella of the thematic area, “Urban Analytics for Transforming Cities and Regions”, ILUS 2023 is dedicated to give answers to the question how interdisciplinary concepts in spatial analysis and data modelling can contribute and support sustainable urban and regional development. To this end, the symposium covers the major topics: Urban Dynamics, Resilient urban and regional systems, Open data in planning and urban management, and Big Data Analytics and Land Use.

The symposium includes original contributions from researchers with an objective to advance the knowledge on urban dynamics towards sustainability in the Global South and Global North.

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density. Our study takes into account the influence of site characteristics, such as building density and height, on the effectiveness of GI practices.

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Urban dynamics
Keywords: Urban growth, Regional planning, Rural-urban migration, Urban densification, Stepwise regression analysis

Unraveling the Complexities of Urban Densification: Stepwise Regression Insights for Regional Planning on Belgium

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Abstract:
Since the advent of the 19th century, the phenomenon of rural-urban migration has propelled the rapid expansion of urban areas, necessitating innovative regional planning strategies. A crucial aspect of effective regional planning lies in identifying the pivotal variables that either stimulate or impede urban growth. Our prior research utilized a sophisticated multidensity multinomial logistic regression model to scrutinize the influence of various controlling factors, acting as explanatory variables, on urban densification, the dependent variable. However, it remains imperative to address the issue of variable (un)certainty. Consequently, we endeavor to enhance our comprehension of the intricate interrelationships among these explanatory variables and their level of certainty for inclusion in a comprehensive multiple regression model. To accomplish this, we undertake a sensitivity analysis utilizing backward stepwise regression(BSWR) techniques. Our study encompasses a thoroughly curated dataset comprising ten variables, encompassing geophysical, accessibility, and socio-economic factors, renowned for their impact on urban densification in the regions of Brussels capital, Flemish Brabant, and Walloon Brabant in Belgium. In order to maintain data homogeneity, our study focuses exclusively on the aforementioned regions. The findings of our analysis reveal that BSWR approach highlights the high significance of variables such as Zoning, number of Household, number of Jobs, Population density, Station, Local roads, and Residential Roads. Notably, the variables number of Jobs , residential Roads, Local roads ,Population density consistently emerge as imperative factors in both methodologies, demonstrating their vital role in urban densification modelling. This knowledge can guide policymakers in formulating targeted interventions to enhance job opportunities and manage population growth effectively. It also underscores the importance of considering factors like zoning regulations, household numbers, and transportation infrastructure in urban planning policies to ensure efficient land use, sustainable development, and the creation of liveable urban environments. While stepwise regression possesses certain limitations, it remains a powerful tool for effective model and variable selection, particularly adept at handling complex, large-scale datasets and streamlining the identification of key input variables, thus filling a void in conventional land use change models. By leveraging these findings, policymakers can make informed choices, adapt their policies to changing urban dynamics, and work towards a sustainable future, especially in the context of increasingly available data. Overall, our research contributes to advancing the understanding of urban growth patterns and provides practical implications for urban planning policies, empowering decision-makers to navigate the complexities of urban development and create resilient, liveable cities.

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