

Who's afraid of heights? An agent-based model of urban density

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Abstract

Urban density is at the heart of the urban economics and planning literature, especially given its importance in terms of the sustainability of a growing urban population. Density is the product of complex web of decisions involving developers, planners and households. But how do these interactions unfold and produce a particular urban environment? How does consumer taste, income heterogeneity and institutional factors affect urban form?

We investigate these questions by developing DUE-ABM (Density of Urban Environments Agent-based Model), a spatially explicit abstract model of a land development and real estate market. We use an innovative approach that accounts for two important dimensions of density: height of buildings and amount of open area. Developers consider different locations and development types, and select the most profitable. Profitability of each alternative is calculated taking into account development costs, expected revenue and development process duration, which can vary due to institutional and political factors.

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