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Agent-Based Modeling Simulations for Solving Pakistan's Urban Challenge,

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Abstract

In all successful modern economies, cities are the engines of growth and melting pots of diversely talented individuals. They offer inclusive environments with openness and access to opportunities, thus enabling the formation of creative clusters that become the bedrocks of prosperity. On the contrary, cities in Pakistan are currently marred by low levels of creativity, lack of community spaces, growing sprawl and poor urban mobility. By examining the relationship between creativity and land-use, this study will explore the underlying factors maintaining the status quo. Using social complexity theory, a stylized agent-based model was created to simulate urban Pakistan from the bottom-up. Drawing key insights from urban creativity literature, the first stage of the modeling process will involved building a theoretical model of creative cluster formation. After gaining sufficient confidence in the model through validation with real outcomes, the next stage will comprise stylizing the model on Karachi's unique urban form and function. The final outcome will therefore be a spatially explicit model offering critical insights on potential interventions such as revamping urban zoning laws to spur the formation of creative clusters through mixed land-use.