Examining Disease Prevention Measures within Heterogeneous Communities

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The worldwide pandemic response to the SARS-CoV-2 coronavirus has varied greatly from region to region with many countries implementing stay-at-home restrictions and travel bans to curb human mobility in an attempt to limit vectors for disease transmission. We attempt to quantify the effectiveness of these policies within heterogeneous networks via stochastic agent-based modelling of human mobility and the emergent spatial effects within communities that follow. Examined in this work are movement patterns between home, work, public transit, and central marketplace locations under a spectrum of public lock-down and quarantine policies, simulated within the ABM and compared via case study to data from the current outbreak. We found diminishing returns in the effectiveness of these strategies as a function of their implementation time.