Computational and Mathematical Methods in Medicine

Hindawi

Special Issue on

Application of Agent-Based Models to Urban Health Issues

CALL FOR PAPERS

It is projected that 66% of the world population will live in cities by 2050. Cities are complex and dynamic systems where interactions between environmental, social, cultural, and economic factors jointly influence human health and wellbeing. An agent-based model (ABM) simulates how agents (e.g., individuals, households, and institutions) interact with each other to generate higher-level patterns. These interactions are based on probabilistic or heuristic rules, which are parameterized by real-world data. ABMs allow greater flexibility for modeling complex, dynamic, nonlinear, and feedback processes, which are increasingly being observed in several urban health issues. The benefits of using ABMs to understand urban health issues are two-fold. First, we may improve our conceptual and practical understanding of how cities evolve and function to influence human health. Second, ABMs serve as computational tools for policymakers to virtually evaluate novel strategies from a systems perspective. Given these benefits of ABMs, such models have only recently been utilized in the urban health literature.

This special issue aims to promote the use of ABMs in population health studies with a particular focus on urban health issues. Collaboration across disciplines is vital in the application of agent-based models. Paper submissions with an emphasis on interdisciplinary and team science efforts between quantitative sciences (e.g., physics, computer science, informatics, and data science) and biomedical and environmental sciences (e.g., medicine, epidemiology, health services research, sociology, geography, environmental science, and public policy) are welcome. We also encourage submissions from emerging disciplines, such as causal inference, population health management, public health informatics, and metropolitan science. Submissions with a methodological or theoretical innovation that bears relevance for the development, calibration/validation, and application of agent-based models to urban health issues are also strongly encouraged.

We invite authors to contribute high-quality original research articles as well as review articles that will illustrate the utility and potentials of ABMs for urban health issues.

Potential topics include but are not limited to the following:

- Social determinants of health
- Environmental health and built environment
- Health disparities, health equity, and community resilience
- Social networks and health promotion
- Health services research and population health management
- Disaster preparedness and climate change
- Urban migration and residential mobility

Authors can submit their manuscripts through the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/cmmm/aabm/.

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