

¹Systems approaches to address health and wellbeing in the changing urban environment

The ICSU Urban Health programme promotes systems approaches in understanding and intervening to make cities healthier and improve health and wellbeing in urban settings. Systems approaches go beyond the recognition that health is affected by distal factors or factors defined at multiple levels of organization. They explicitly allow for dynamic processes including feedbacks as well as interdependencies and interactions between individuals and between individuals and environments over time. These feedbacks and interdependencies can result in non-linear relations and unanticipated effects distant in space or time. In going beyond the traditional emphasis on isolating the “independent” effect of specific factors to an understanding of the functioning of the system as a whole, the use of systems approaches implies a paradigm shift in the way in which population health is conceptualized, studied, and intervened on.

Given the novelty of systems approaches in the study of population health and the city, the programme takes a broad view of systems approaches. Systems approaches involve one or more of the following elements:

- (1) the development of new conceptual models of the processes leading to health in urban settings that incorporate dynamic relations. These conceptual models must be specific to a given research problem or question; the development of these models may involve input from stakeholders as well as scientists as appropriate to the research problem and context;
- (2) the use of systems tools and formal simulation models, such as agent-based models, systems dynamic models, or other systems modeling tools to better understand the functioning of the integrated urban and health system or predict changes to health under various hypothetical interventions;
- (3) the integration of various sources and types of data (including spatial, visual, quantitative and qualitative data) in the conceptual models and/or the formal simulation models as well as the identification of important data gaps that need to be filled in order to advance understanding of how the system works.

¹ This note was developed by the Scientific Committee for the ICSU Urban Health programme. Its purpose is to clarify the criteria for ‘systems (analysis) approaches’ as relevant to the programme.

It is expected that the use of systems approaches will advance our understanding of the determinants of urban health and wellbeing as well as enhance our ability to intervene to improve health and reduce health inequalities in urban settings. The use of these approaches is expected to yield new insights into old problems, identify new important questions, and point to fresh kinds of data that need to be collected or processed in order to advance the planning and management of healthy cities.