Modeling Human Mobility and Risk of HIV Acquisition

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Abstract

Understanding human mobility, or movement over short or long spaces for short or long periods of time, together with collecting and statistical modeling of data on human movement in time and space are important research endeavors in many fields, such as spatial epidemiology, demography and population science, urban design and planning, transportation research and environmental psychology. While there have been consistent advances in understanding migration (more permanent movement patterns) and its impact on human well-being, macro-social, political, and economic organization, advances in studies of mobility have been stymied by difficulty in recording and measuring how humans move on a minute and detailed scale. Mapping individuals is difficult because a person’s residence does not reflect their interaction with the physical and social environment. Moreover, numerous communities in disadvantaged regions are characterized by frequent migration due to mobile individuals that periodically change their residences between urban, rural and peri-urban areas. Such individuals disconnect from the local sexual network associated with the origin of their move, and are likely to connect with another local sexual network associated with their destination.

This talk will introduce a framework for modeling space-time human mobility. The key goal is to ascertain causal relationships between differing mobility patterns and subsequent risk of HIV acquisition. We use data from the demographic information system of the Africa Health Research Institute located in northern KwaZulu-Natal, South Africa, and geolocated Twitter data from South Africa.

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Note: Taking photos during the seminar is prohibited

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