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Project Title: Spatial Patterns of Liver Fluke Infection and Risk in the Mekong Region

Abstract:

Infection with the liver fluke *Opisthorchis viverrini* (Ov) is a major public health problem in Southeast Asia, particularly in the Mekong region. This foodborne parasite has infected an estimated 10 million people in the region through the consumption of raw or undercooked freshwater fish. Despite decades of efforts on diagnosis and control of Ov infection - while valuable in many regards and responsible for many achievements - there remains a marked spatial variation in Ov infection. This necessitates the incorporation of geographic concepts and approaches to scrutinize the intricate human-environment system that favors Ov transmission in the region. The geospatial modeling approach has been proven useful to study the distribution and underlying risk factors of other diseases, but such modeling effort is lacking, especially for Northeast Thailand, which is still plagued with high infection prevalence. In addition, as consuming raw fish dishes is embedded as part of the indigenous cultural identity, a more in-depth analysis of the attributes and practices associated with raw fish dish sharing is necessary. This project thus aims to model the spatial distribution and risk of Ov infection, and to characterize the social network behind raw fish eating behavior and food sharing practice, so as to advance the knowledge of the environmental, social-economic and behavioral influences on disease transmission.

The significance of the project is twofold. First, the spatially explicit estimation of Ov infection will promote the exploration of underlying risk factors and the analysis of changes in infection patterns. The investigation on the relationships between mapped disease prevalence and environmental factors will also stimulate further studies on how climate change may affect the long-term transmission and distributions of diseases. Second, the mapping of food sharing relationships among households will shed light on the social connections underlying raw fish consumption behavior. It will provide a means to refine the current understanding of socio-cultural determinants on disease transmission potential. The findings of the project will have broader implications to society because they will offer new insights for better spatial targeting of disease control and prioritizing intervention efforts.