

## Comparing the Eulerian and Lagrangian Spatial Models for Vector-Borne Disease Dynamics

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When it comes to pathogen transmission, movement is an important factor to consider as it determines who becomes exposed to a pathogen. Studies have demonstrated how a vector-borne disease may persist in locations where the abundance of the vector is low, which can be attributed to the host coming from an area of high transmission. In addition, the movement of the vectors contributes to the spread of the disease locally. Considering the movement of both host and vectors in a model, the scale in which they move are significantly different as a vector can only travel short distances. In this talk, we examine the relationship between the Eulerian and Lagrangian approaches for modeling movement of vector-borne diseases in discrete space. We will look at two scenarios: a model in which the host and vector move according to the Eulerian framework, and another model where host moves with respect to the Lagrangian framework and the vector moves with respect to the Eulerian framework.

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