Spatial Models

1. Explain the difference between metapopulation model and multi-host model.

Multi-host models concern interactions between different host species, whereas metapopulation models are used to examine interactions of populations of the same species that are spatially separated. These separated populations interact when individuals move between the populations.

1. Explain the difference between cross-coupled and mobility model.

The cross-coupled model incorporates space implicitly by modeling the strength of contacts (force of infection) within and between populations. This is accomplished using WAIFW matrices where the force of infection implicitly models space. The mobility model explicitly incorporates movement of individuals, with commuting or permeant migration usually being the two most important components.

1. Formulate the compartment models of cross-coupled and mobility model.
2. Think about why coupling can lead to synchrony in disease prevalence of (sub)populations.