

Equilibrium Prevalence

Han et al. (2020) defined equilibrium prevalence as an epidemiological metric generated by a mechanistic SIR density-dependent transmission model parameterized according to intrinsic traits of rodents. This is captured by the equation:

$$\frac{I'}{K} = \mu \left(\frac{1}{\gamma + \mu} - \frac{1}{\beta K} \right)$$

where β is the per-individual transmission rate, K is the carrying capacity, γ is the per-individual recovery rate, μ is the per-individual natural mortality rate, and I' is the number of infectious individuals at the endemic steady state. This model can indicate the risk of human exposure to a directly transmitted pathogen based on the species' ecological traits as indicators of transmission risk rather than the actual prevalence of a pathogen (Han et al. 2020).