

EXTICTION IN A GENERALIZED CHAIN BINOMIAL EPIDEMIC
MODEL

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Abstract

Here, our aim is to study extinction times in a stochastic epidemic model. First we consider the mean dynamics of the stochastic model. Since we are interested in a nonoverlapping population, our meanfield equations are difference equations. We give conditons for existence and global stability of endemic equilibrium. We show that the stochastic model stays close to the deterministic model for finite time. Using this approximation, we also give exponential lower bounds for mean time to extinction. In addition, we also calculate mean time to reach endemic equilibrium for large populations.

Keywords: Chain binomial epidemic model, Difference equations, Extinction time

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