Behavior threshold conditions in SIS STD models

ABSTRACT

In multi-group epidemiological models with nonrandom mixing be- tween people in the different groups, often artificial constraints have to be imposed in order to satisfy the balance conditions. Based on the model in this article, we construct a simple biased mixing model where the balance conditions are automatically satisfied as a natural conse- quence of the equations. We propose and analyze a heterogeneous, multigroup, susceptible-infective-susceptible (SIS) sexually transmitted disease (STD) model where the desirability and acceptability in part- nership formations are functions of the infected individuals.

Keyword: Balance constraint; Reproductive number; Sensitivity; Partners