

A Susceptible-Infected-Vaccinated Model for Influenza Infection Dynamics

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Abstract

A current problem in public health is our inability to reliably forecast the timing and intensity of seasonal Influenza. Current models for infectious diseases like SIS (susceptible-infected-susceptible) models inadequately account for the seasonal dynamics of Influenza. Additionally, more complex models like the SIR (susceptible-infected-recovered) model incorrectly assume that recovery confers lasting immunity. This work proposes an SIV (susceptible-infected-vaccinated) which takes into account the time-limited nature of immunity conferred via vaccination as well as the seasonal pattern of Influenza outbreaks.

Problem Description

Simplifications

Mathematical Model

Solution of the Mathematical Problem

Results and Discussion

Improvement

Conclusions