

Generalized S-I-R model

1 Equations

These are the equations for the model:

$$\frac{dE_1}{dt} = -\Theta_{E_1}E_1 + \nu_{E_1}R_1 + \omega_{R_1}R_1 + \nu_{E_1} - \Lambda_{E_1}E_1 - \nu_{E_1}$$

$$\frac{dI_{pre1}}{dt} = -\Theta_{I_{PRE1}}I_{pre1} + \gamma_{I_{PRE1}}E_1$$

$$\frac{dI_{symps1}}{dt} = -\Theta_{I_{SYMP_S1}}I_{symp_s1} + \gamma_{I_{SYMP_S1}}I_{pre1}$$

$$\frac{dI_{sympm1}}{dt} = -\Theta_{I_{SYMP_M1}}I_{symp_m1} + \gamma_{I_{SYMP_M1}}I_{pre1}$$

$$\frac{dI_{asympt1}}{dt} = -\Theta_{I_{ASYMP1}}I_{asympt1} + \gamma_{I_{ASYMP1}}I_{pre1}$$

$$\frac{dHOSP_{m1}}{dt} = -\Theta_{HOSP_{M1}}HOSP_m1 + \theta_{HOSP_{M1}}I_{symp_m1}$$

$$\frac{dHOSP_{s1}}{dt} = -\Theta_{HOSP_{S1}}HOSP_s1 + \theta_{HOSP_{S1}}I_{symp_s1}$$

$$\frac{dR_1}{dt} = -\Theta_{R_1}R_1 + \omega_{R_1}I_{symp_s1} + \omega_{R_1}I_{symp_m1} + \omega_{R_1}I_{asympt1} + \omega_{R_1}HOSP_m1 + \omega_{R_1}HOSP_s1$$

$$\frac{dS}{dt} = \frac{R_1}{N}\delta_1 - \frac{E_1}{N}\delta_1$$