

COVID19 SIR MODEL EQUATIONS

1 Covid19 Model Equations

These are the equations for the model:

$$\frac{dS}{dt} = -\beta_0 * I_0 * \frac{S}{N} - \delta_0 - \beta_1 * I_1 * \frac{S}{N} - \delta_1 - \beta_2 * I_2 * \frac{S}{N} - \delta_2 - \beta_3 * I_3 * \frac{S}{N} - \delta_3 - \beta_4 * I_4 * \frac{S}{N} - \delta_4 \quad (1)$$

$$\frac{dI_0}{dt} = \beta_0 * I_0 * \frac{S}{N} - \gamma_0 I_0 + \delta_0 \quad (2)$$

$$\frac{dI_1}{dt} = \beta_1 * I_1 * \frac{S}{N} - \gamma_1 I_1 + \delta_1 \quad (3)$$

$$\frac{dI_2}{dt} = \beta_2 * I_2 * \frac{S}{N} - \gamma_2 I_2 + \delta_2 \quad (4)$$

$$\frac{dI_3}{dt} = \beta_3 * I_3 * \frac{S}{N} - \gamma_3 I_3 + \delta_3 \quad (5)$$

$$\frac{dI_4}{dt} = \beta_4 * I_4 * \frac{S}{N} - \gamma_4 I_4 + \delta_4 \quad (6)$$

$$\frac{dR_0}{dt} = \gamma_0 * I_0 \quad (7)$$

$$\frac{dR_1}{dt} = \gamma_1 * I_1 \quad (8)$$

$$\frac{dR_2}{dt} = \gamma_2 * I_2 \quad (9)$$

$$\frac{dR_3}{dt} = \gamma_3 * I_3 \quad (10)$$

$$\frac{dR_4}{dt} = \gamma_4 * I_4 \quad (11)$$