

$$F(t) = \begin{pmatrix} \beta_1 I_1(t) \frac{S(t)}{N} & 0 \\ \beta_2 I_2(t) \frac{S(t)}{N} & 0 \end{pmatrix} \quad G(t) = \begin{pmatrix} 0 & \gamma_1 I_1(t) \\ 0 & 0 \end{pmatrix} \quad \mu(t) = \begin{pmatrix} 0 \\ \gamma_2 I_2(t) \end{pmatrix}$$