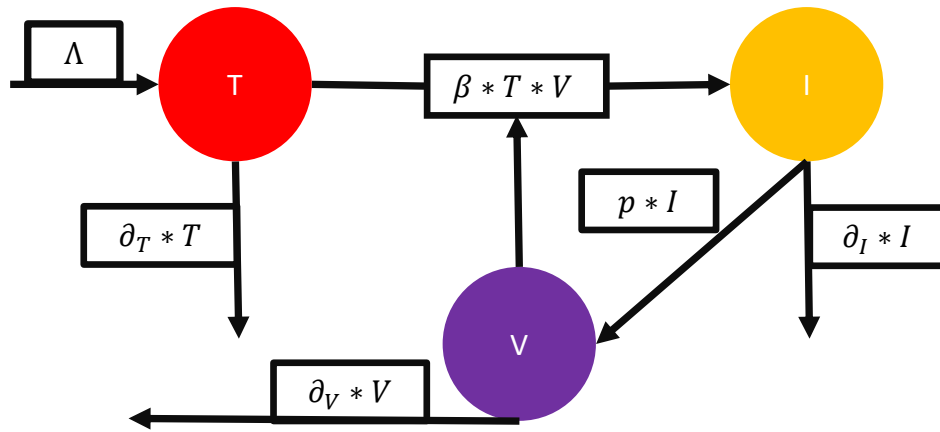


R0 acts as a predictor for dynamics in epidemiologic TIV-model

TIV-model



Derivation of R0

R0 describes the quantity of target cells infected by an infected cell and can be derived from the model parameters. Multiplying the infection rate per T, available T and death rate of virions results in R0. Calculating this value prior to a simulation renders an informative estimate of resulting dynamics. Despite complex TIV-model dynamics, interpretation of R0 stays trivial. R0 has positive influence on virion dispersal if greater 1.

$$R_0 = \frac{\Lambda * \beta * p}{\delta_T * \delta_T * \delta_T} \quad (1)$$

Figures: Color coding as on the left, R0 estimates result from formula (1). To obtain these dynamics, parameter β was varied. At $R_0 = 0.1$ virion density declines, $R_0 = 1$ virion density stagnates and $R_0 = 10$ results in strong virion replication and cell infection.

