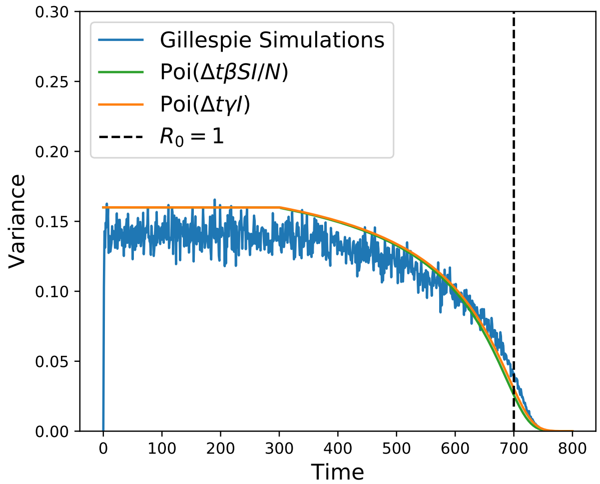
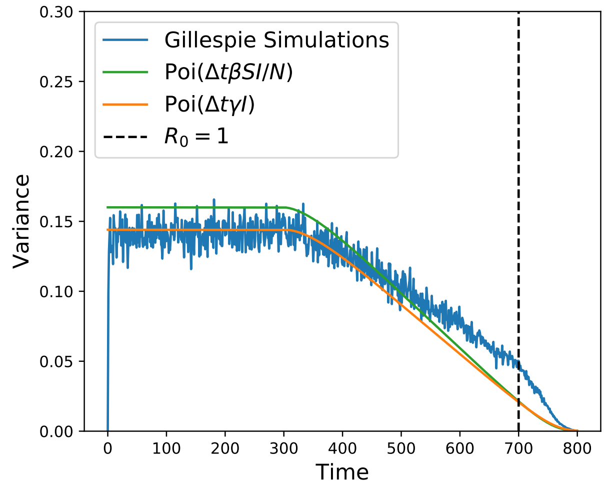
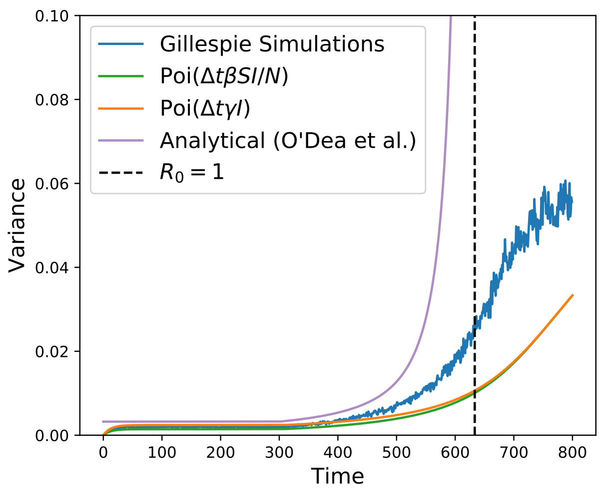
Approximating incidence by using the rate of the Poisson Process, $\lambda(t) = \Delta t \gamma I$



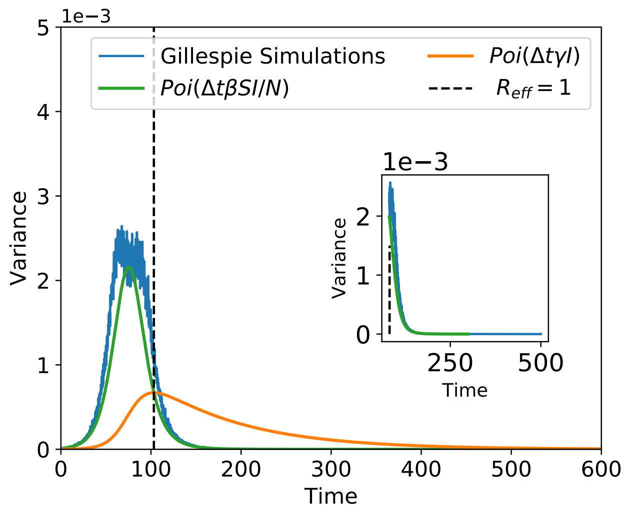
(a) SIS - social distancing (elimination)



(b) SIS - vaccination (elimination)



(c) SIS (emergence)



(d) SIR: epidemic curve (emergence and elimination phase)

Fig. S2. Approximating incidence by using the rate of the Poisson Process, $\lambda(t) = \Delta t \gamma I$**.** For each model: SIS with social distancing (a), SIS with vaccination (b), SIS increasing transmission/emergence (c) and the SIR epidemic curve (d) we plot two different approximations of the intensity of a Poisson process. The dashed line is the point where $R_0 = 1$ or $R_{eff} = 1$ (effective reproduction number - SIR model). Blue line is variance calculated over stochastic simulations. Orange line: Poisson Process with $\lambda(t) = \gamma I(t)$. Green line: Poisson Process with $\lambda(t) = \beta S(t)I(t)$. Panel (d): SIR epidemic curve, is included here to demonstrate an example where the approximation $\beta SI/N \approx \gamma I$ isn't appropriate. This is the SIR model with: $\beta(t) = 0.1$ and $\gamma = 0.01$