COVID-19 SIR Model Dynamics (N=1000000,R0=2.650,1/gamma=4.500, beta=0.589) 4.0 3.5 0.4 $r_I(t)$ 3.0 -0.3 Rt (Effective Reproductive Rate) $\mathscr{R}_t \equiv \left(\frac{S(t)}{N(t)}\right) \mathscr{R}_0$ rI (temporal growth rate) \mathscr{R}_t $r_I \equiv \gamma [\mathscr{R}_t - 1]$ 0.2 $\frac{dI}{dt} = r_I I$ 0.1 Critical (r_I =0.00) 0.0 Critical (Rt=1.00) 1.0 39 39 -0.10.5 0.0 -0.250 175 75 125 25 50 75 100 125 150 25 100 150 175 0 0 Time[days] Time[days]