## Simulation with $\beta_0=0.15$ and $\beta_1=0.3$ , seed: I1 = 20, I2 = 10 Mean I\_cum with Mean R 200000 150000 Population Mean I\_cum 100000 Mean R Mean S 50000 0 Primary infections I1, I2, and recovered R1, R2 Mean I1 20000 Mean I2 Population 10000 Mean R1 Mean R2 0 Time (days) Secondary infections I12, I21, and recovered R1, R2 Mean I12 20000 Mean I21 Population 10000 Mean R1 Mean R2 0 Time (days) All infections I1, I2, I12, I21 to check overlap Mean I1 2000 Mean I2 Population 0001 Mean I12 Mean I21 0 Time (days) Secondary infections I12, I21 to check overlap Mean I12 400 Mean I21 Population 002 0 500 1000 1500 2000 2500 3000 3500 Time (days) $\beta(t)$ parameter over time 0.18 0.16 0.14 0.12 Ó 1500 500 1000 2000 2500 3000 3500 Time (days)