Generating observations from epidemic simulations

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3/16/2017

Epidemic simulations using the SIR model

The Susceptible-Infected-Removed (SIR) is a simple state-space-model in which infected individuals $I(t)$ cause infections in susceptible individuals $S(t)$ at a rate $\beta \frac{I}{N}$. Infected individuals are removed (through recovery or death) at a rate γ. The duration of infection is $D = 1\frac{1}{\gamma}$ and the basic reproduction number is $R_0 = \beta D$.

```
set.seed(20170317)
simulated.epidemic <- SIR(beta=0.15, gamma=1/10,
                          init.states=list(S=1000, I=1, R=0),
                          time.step=0.25, num.steps=800,
                          agg.time.steps=4) # aggregate incidence reports temporally
simulated.data <- get_SIR_data(simulated.epidemic, reporting=0.25, filename="../data/sim_SIR_beta_0.15_g

simulation.plot <- visualize.SIR(simulated.data)

## Loading required package: ggplot2

grid.draw(simulation.plot)
```