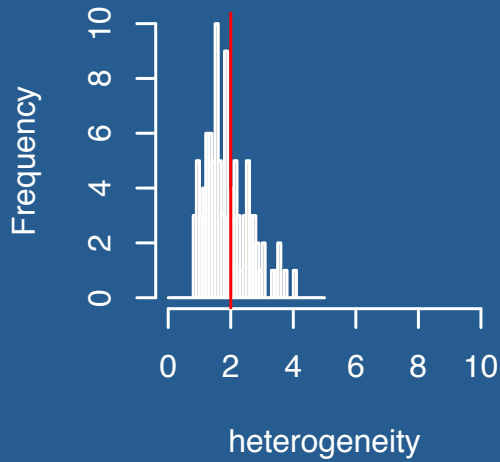


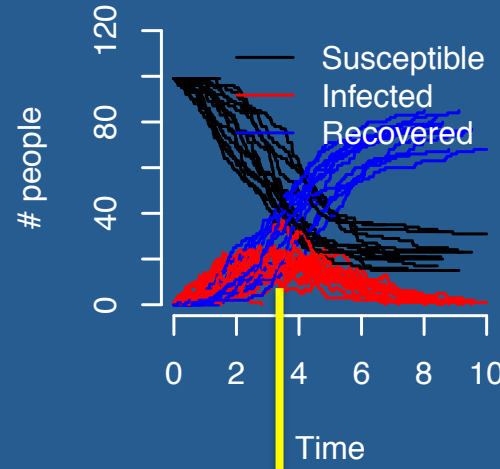
het.epidemic(beta.mean = 2, beta.var = .5, runs = 30, end.time = 10, pop.size = 100, gamma = 1)

het.epidemic(beta.mean = 2, beta.var = 8, runs = 30, end.time = 10, pop.size = 100, gamma = 1)

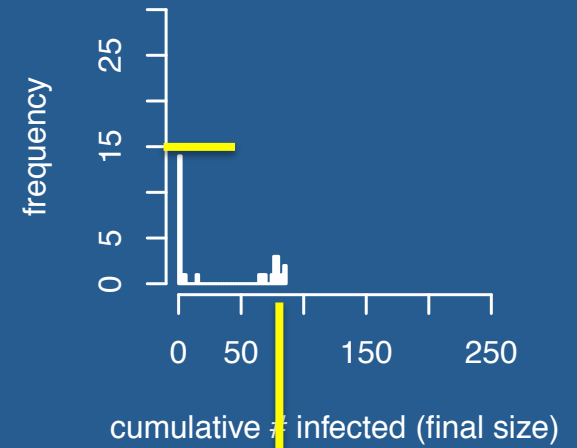
distribution of average R



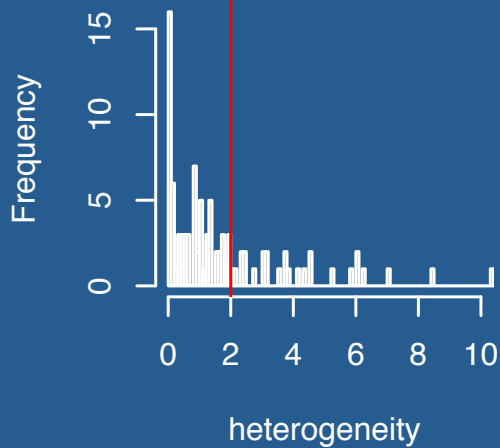
time series



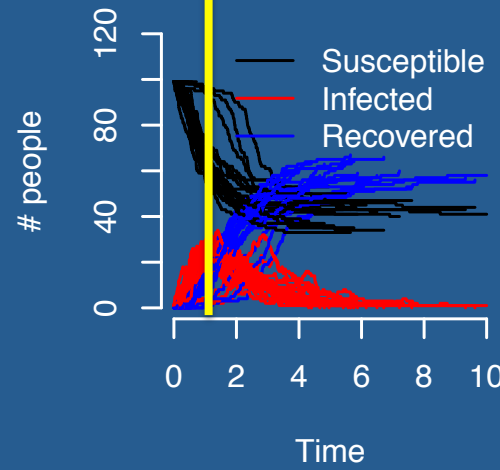
outbreak size distribution



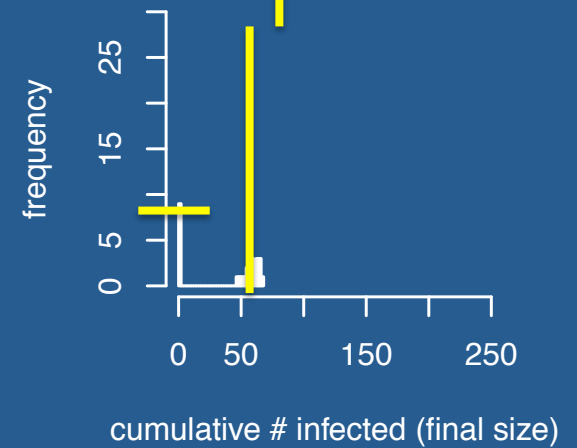
distribution of average R



time series



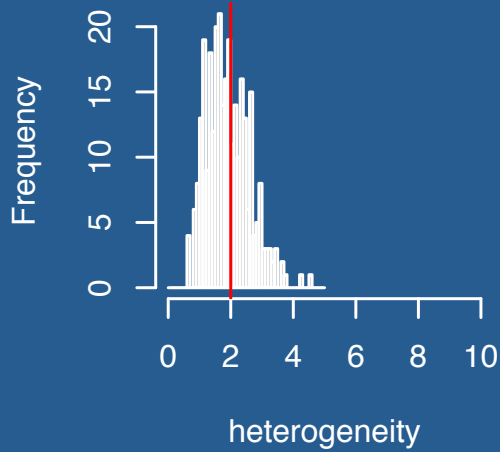
outbreak size distribution



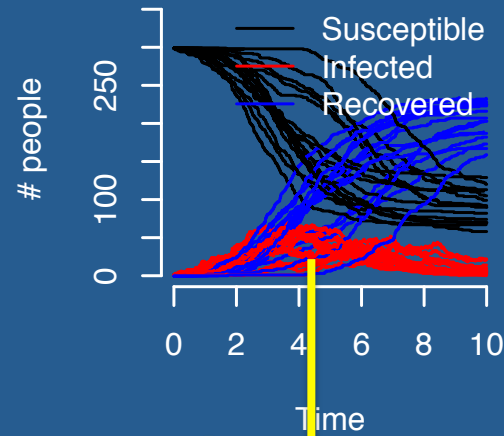
het.epidemic(beta.mean = 2, beta.var = .5, runs = 30, end.time = 10, pop.size = 300, gmma = 1)

het.epidemic(beta.mean = 2, beta.var = 8, runs = 30, end.time = 10, pop.size = 300, gmma = 1)

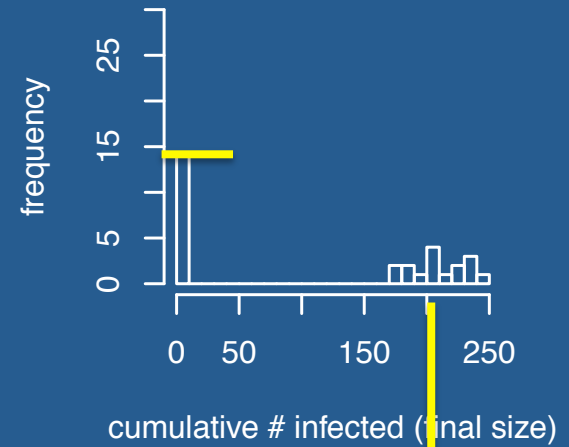
distribution of average R



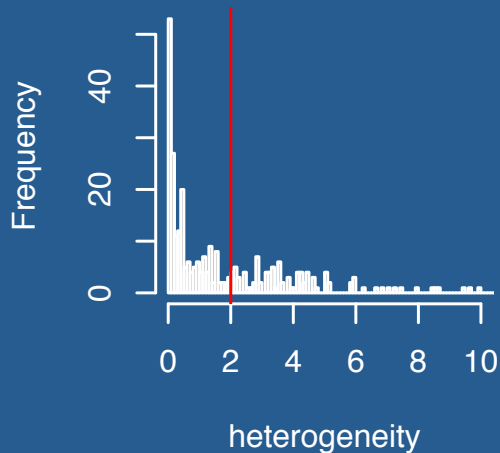
time series



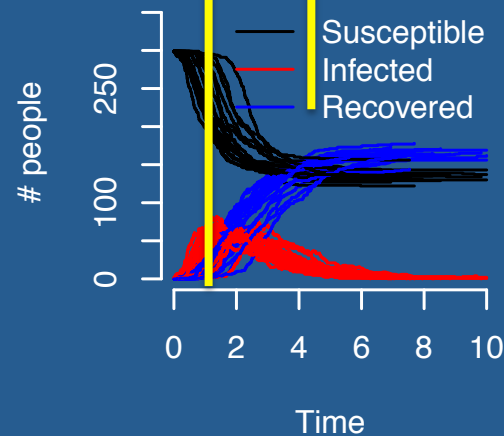
outbreak size distribution



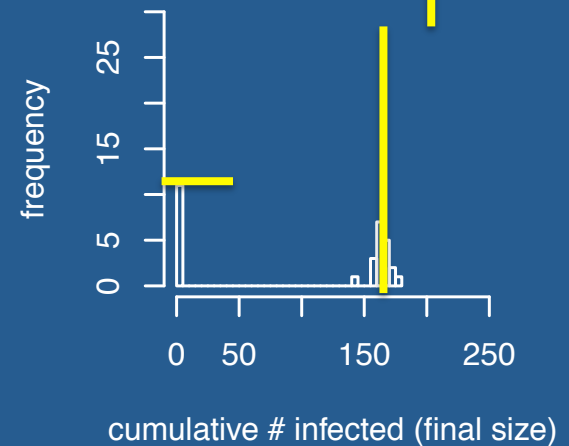
distribution of average R



time series



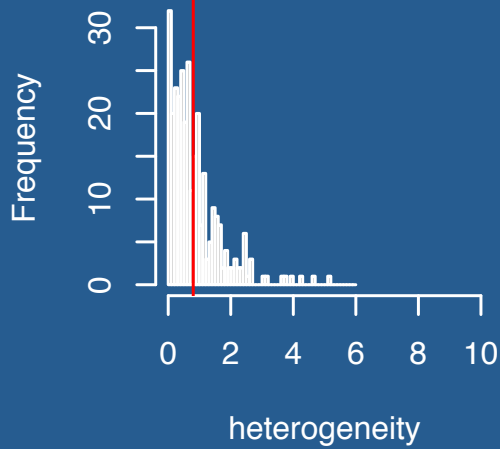
outbreak size distribution



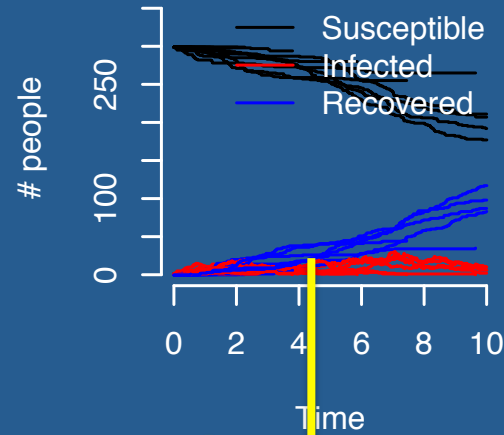
het.epidemic(beta.mean = .8, beta.var = .5, runs = 30, end.time = 10, pop.size = 300, gmma = 1)

het.epidemic(beta.mean = .8, beta.var = 8, runs = 30, end.time = 10, pop.size = 300, gmma = 1)

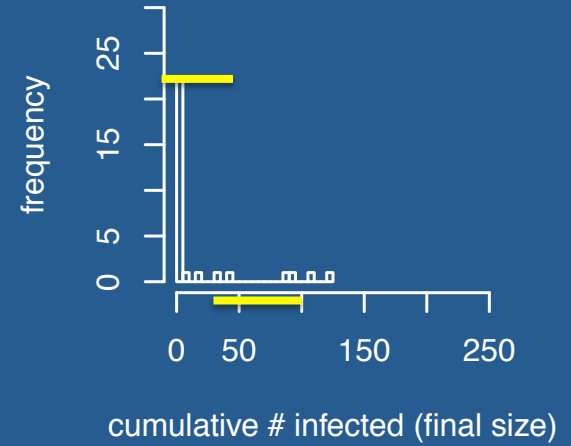
distribution of average R



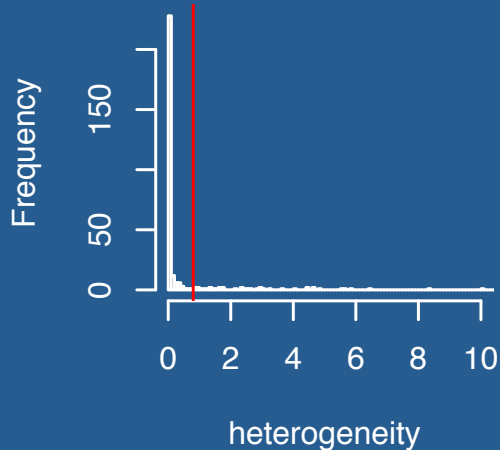
time series



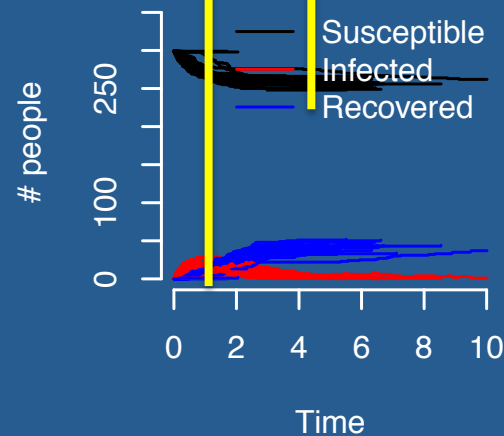
outbreak size distribution



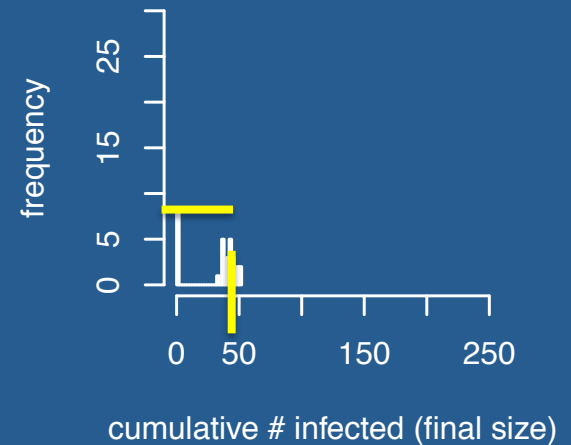
distribution of average R



time series



outbreak size distribution



Summary

- Heterogeneity makes pathogens
 - more likely to invade
 - smaller epidemics
 - faster epidemics
 - faster initial rate of increase