Monte Carlo Methods
Statistics 202C
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Study Unit 2: Models for Epidemics in Los Angeles

Due Tuesday, April 14, 2020

In these study units we are considering stochastic ("Monte Carlo") models for epidemics. The first unit reviewed the fundamental mathematical epidemic models and work thru those more relevant to COVID-19 modeling.

The material requires a substantial amount of self-study of the epidemics and computational models.

In this unit you will run a number of "intervention" experiments on Los Angeles qualitatively understand how the epidemic may play out in our community.

The units will rely on the EpiModel software framework for computation. EpiModel relies on the statnet suite of packages, which I am associated with.

Reading the Core material

First, review the lecture notes 202Clecture0 (Part 2), which are also adapted notes from work by Tim Churches and the tutorial Basic ICMs with EpiModel. It describes how to use EpiModel to simulate from discrete time individual compartmental models for epidemics.

Next read the lecture notes 202Clecture0 (Part 3) and 202Clecture0 (Part 4) which are adapted notes from work by Tim Churches.

1) *The effect of interventions on epidemic spread in Los Angeles*
The above notes set parameters for Australia. For each of the parameters, think if it needs to be updated or altered for our current knowledge of conditions in Los Angeles. Conduct a number of "experiments", that is, simulations under different parameter values to study the impact of interventions in Los Angeles.

For each of the experiments, describe what you are trying to achieve and how the parameter values represent that. Summarize the results of your experiments.

This is an open ended question. However, try some interventions and conditions more relevant to Los Angeles than presented in the class notes.