AMSC/MATH 420, Spring 2015
Second Project on Modeling Epidemics: Instructions Common to All Projects

This project will use an SIR-like model with the affected population divided into a high-risk group and a lower-risk group. Parameters that quantify the rates of disease transmission within and between groups will be estimated from the AIDS diagnosis data at `http://wonder.cdc.gov/aids-v2002.html`; the geographic areas to use will be chosen after the project team is formed. On the other hand, we will regard parameters that quantify rates of removal from the susceptible and infectuous population to be under our control, subject to a budget that represents resources spent by a public health organization on interventions such as awareness campaigns and disease testing programs. The budget constraint will be a maximum value for a "cost function" that expresses how much resources are required to achieve given values of the removal parameters. The central mathematical problem will be to develop a method to determine removal parameters, constrained by the budget, that minimize the number of people who contract the disease. Another goal will be to see if the optimal removal parameters can be reasonably approximated by a linear (or other simple) function of the transmission parameters and cost function parameters.