Notes from 2/4/14 meeting with Roz

Part I

Quantify where the radiation model does not fit will

Hypothesis: Radiation model doesn't fit well in areas where there is a border

Part II

Come up with a radiation model like formulation that accounts for cross border movements

Part III

Simulate flu like epidemics over network

Compare income to out-of-county commuters (remove counties with small populations or color them differently/ gradient)

optim equivalent in python (Nelder-Mead optimization)

**from** **scipy.optimize** **import** minimize

Update radiation model

Return probability matrix (3136x3136)

Look up simulating epidemic models in python

Simulate epidemic

Tidy-up repo

Also, we need to clarify more where the radiation model doesn't fit well.

Can you check Figure 2d of the main radiation model, which shows observed and expected population fluxes. Can you re-make that figure, but stratify by distance? and also separately by population size of the donor and recipient counties? It would be good also to see if there are geographic trends, i.e. does it do better on the east or west coast, or in the middle? I know that you did some work quantifying the goodness of fit of the gravity model, but I dont seem to have those figures/documents to hand, and I cant remember if the green/blue map you sent was the error when including Canada as a destination or not.

D3 for within US error

Run minimize with gamma being the parameter

Find maximum likelihood gamma with us+Canada and us+mexico (gamma sub c and gamma sub m)