CE263N/CP257 Assignment 2, part 1, due 09/28/2020

Analyzing Trip Distribution Models (70 pts)

In this exercise you will analyze data U.S Commuting similar to the paper analyzed in class by Lenormand et al.

The file THE NODES.txt has 5 columns describing: county ID; population; latitude; longitude; intra county trips.

The file THE LINKS.txt contains 4 columns: origin county; destination county; distance [km]; number of trips.

1. Read the data and report total out-flows and in-flows of the entire data set.

2. What is the population in the set of counties (P)

3. What is the ratio between total out-flows and (P), why is not close to 1?

4. Singly Constrained GM: Fit the data with an out-flow singly constrained gravity model with exponential decaying function. Report the parameters of the model and show the scatter plot of data vs model

5. Doubly Constrained GM: Fit the data with an doubly constrained gravity model with exponential decaying function. Report the parameters of the model and show the scatter plot of data vs model

6. Radiation Model: Fit the data with the Radiation model. Show the scatter plot of data vs model

7. For the results of 4, 5 and 6 report the CPC, the root mean square error, the R^2 and the maximum error of each model. How the performance of these models compare with the reported values of paper by Lenormand et al. for the US commuting flow data.