DA609 Project Proposal Dan Fanelli

Option 1:
At the end of each chapter in the textbook, you can find a section titled “Projects”. Form a team with at least one other classmate and complete any three projects. It is desirable that the projects selected are from different chapters and use three different mathematical modeling methods. It is also highly desirable that you select one from the first five chapters, one from chapter six to chapter ten, and one from chapter eleven onward. Bonus points will be awarded for projects that go beyond the scope of the initial description. To qualify, please be specific in your final report and final presentation as to the extensions your team implemented.

Project 1: Section 5.5 #3 (p222) - Pick a traffic intersection with a traffic light. Collect data on vehicle arrival times and clearing times. Build a Monte Carlo simulation to model traffic flow at this intersection.

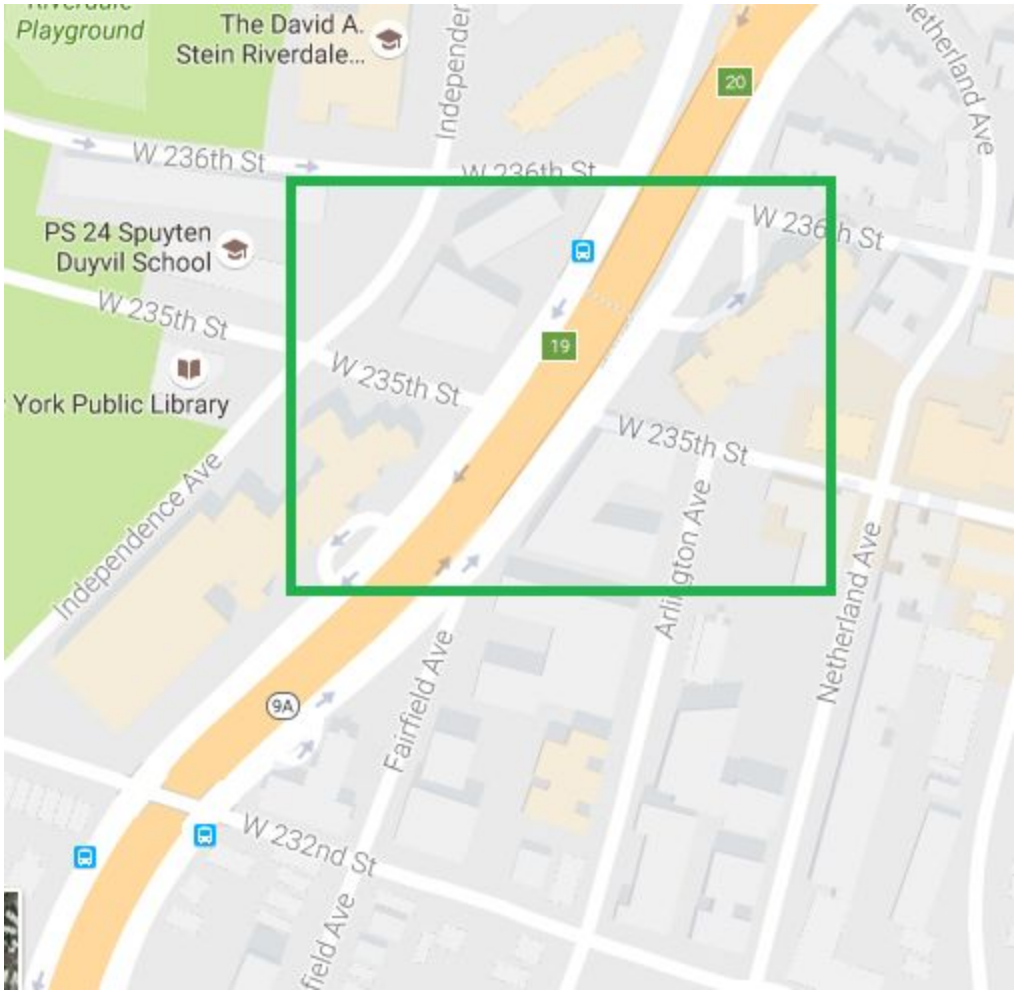
Hourly data is available from

https://data.cityofnewyork.us/NYC-BigApps/Traffic-Volume-Counts-2012-2013-/p424-amsu.

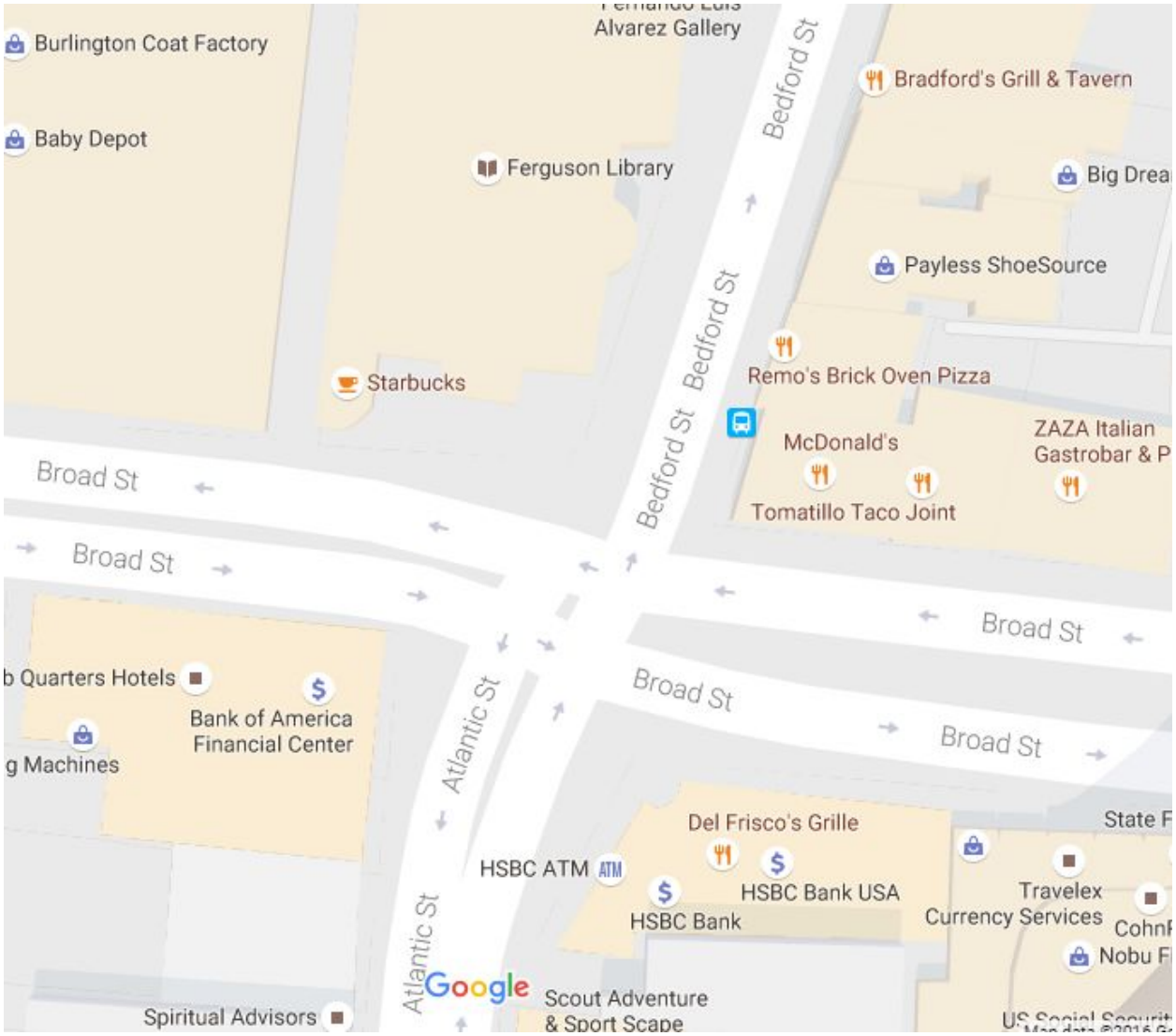
The intersection counts should be derivable via the available traffic data. (Note: the data below is per ROAD, not per intersection), but if Traffic_In == Traffic_Out, then the number of cars in the interseciton should be attainable.

```
kable(sqldf("select Roadway_Name,   _From,  _To,    Direction, Date, X12_00_1_00_AM, X1_00_2_00AM, X2_00_3_00AM
 from traffic where Date = '02/04/2013' and trim(Roadway_Name) = 'HENRY HUDSON PKWY' order by Date"))
```

Roadway_Name	_From	_To	Direction	Date	X12_00_1_00_AM	X1_00_2_00AM	X2_00_3_00AM
HENRY HUDSON PKWY	INDEPENDENCE AVE	W 232nd ST	NB-MAIN	02/04/2013	426	118	75
HENRY HUDSON PKWY	INDEPENDENCE AVE	W 232nd ST	NB-SER	02/04/2013	16	16	8
HENRY HUDSON PKWY	INDEPENDENCE AVE	W 232nd ST	SB-MAIN	02/04/2013	300	98	65
HENRY HUDSON PKWY	INDEPENDENCE AVE	W 232nd ST	SB-SER	02/04/2013	7	7	5
HENRY HUDSON PKWY	W 235th ST	W 236th ST	NB-MAIN	02/04/2013	426	120	70
HENRY HUDSON PKWY	W 235th ST	W 236th ST	NB-SER	02/04/2013	42	16	7
HENRY HUDSON PKWY	W 235th ST	W 236th ST	SB-MAIN	02/04/2013	315	98	63
HENRY HUDSON PKWY	W 235th ST	W 236th ST	SB-SER	02/04/2013	9	5	6
HENRY HUDSON PKWY	FAIRFIELD AVE	W 232nd ST	NB-MAIN	02/04/2013	205	57	43
HENRY HUDSON PKWY	FAIRFIELD AVE	W 232nd ST	NB-SER	02/04/2013	5	7	3
HENRY HUDSON PKWY	FAIRFIELD AVE	W 232nd ST	SB-MAIN	02/04/2013	282	86	57
HENRY HUDSON PKWY	FAIRFIELD AVE	W 232nd ST	SB-SER	02/04/2013	24	17	15



If there is a problem with this NYC Data, then: I will do a rush hour (worst case) simulation on a local intersection in Stamford, CT. Was hoping to video a 5 or 10 minute sample of the data at rush hour for, and then replay it to collect more specific details such as specific “left from atlantic to broad”.



Project 2: Section 8.3 #1 (p322) - Investigate a social network that is of interest to you. Carefully define what the vertices represent and what the edges represent. Are there any new modeling techniques that you had to employ?