

E6893 Big Data Analytics:

***Relationship between population flow and
criminal rate in Manhattan***

Team Members (with UNI): Yunan Lu (yl4021)
Zhicheng Ding (zd2212)
Lin Bai (lb3161)



Motivation

Every day, large amount of people would rush to the school or work place in the morning and go back home in the evening through public transportation, e.g. taxi, subway. At the same time, crimes happens at everywhere. But whether it exists any pattern between the population density and the frequency of crimes? In a specific area, will it has more or less crimes when it is crowded? Besides, using the sentiment analysis of twitter we can describe the people's attitude towards the traffic situation during the day. With this prediction, we could do better in police resource distribution and give some suggestions to the public.

Crimes and Transportation Map

- Crimes Map
- Transportation trajectory of taxi and subway to represent the population flow and calculate the population density in each place in certain period

Regression Analysis

- Visualize relationship between the population density and crime's frequency

Sentiment Analysis

- Sentiment analysis of Twitter based on the time to describe people's mood or attitude towards the traffic situation

Dataset, Algorithm, and Tools

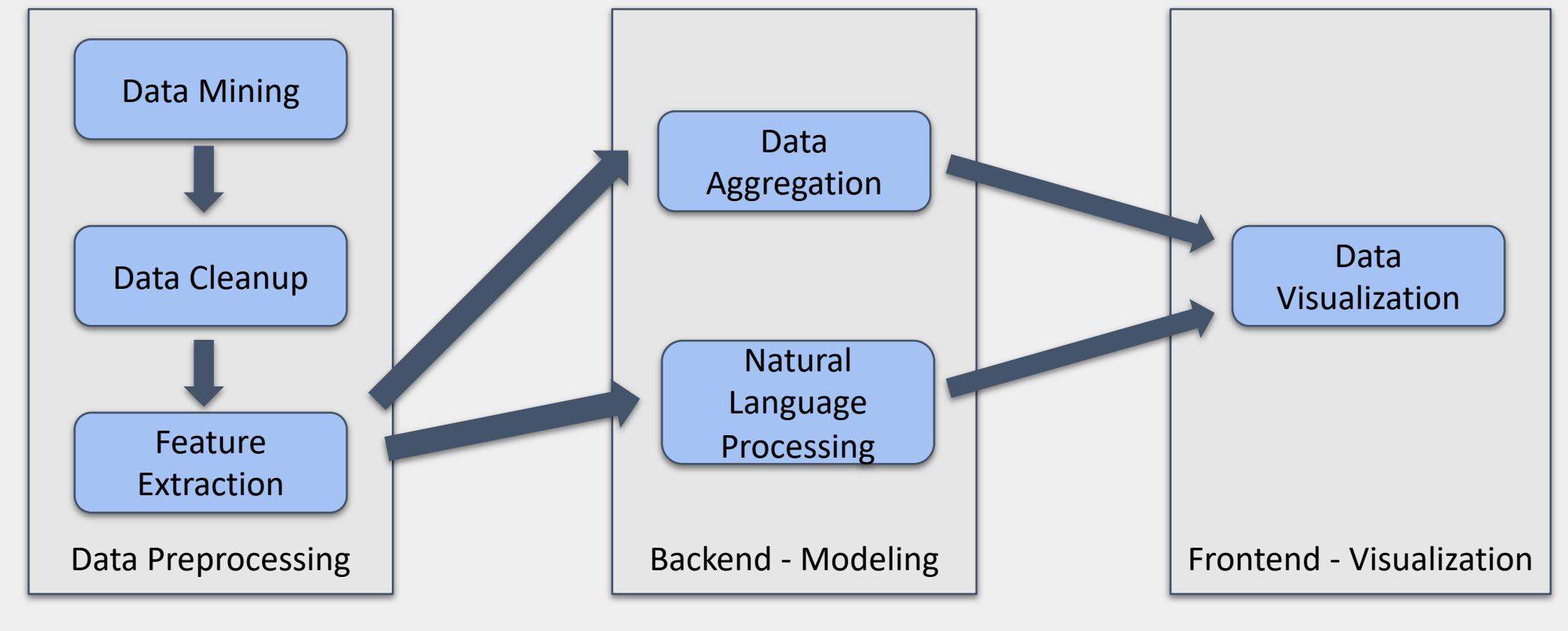
Dataset

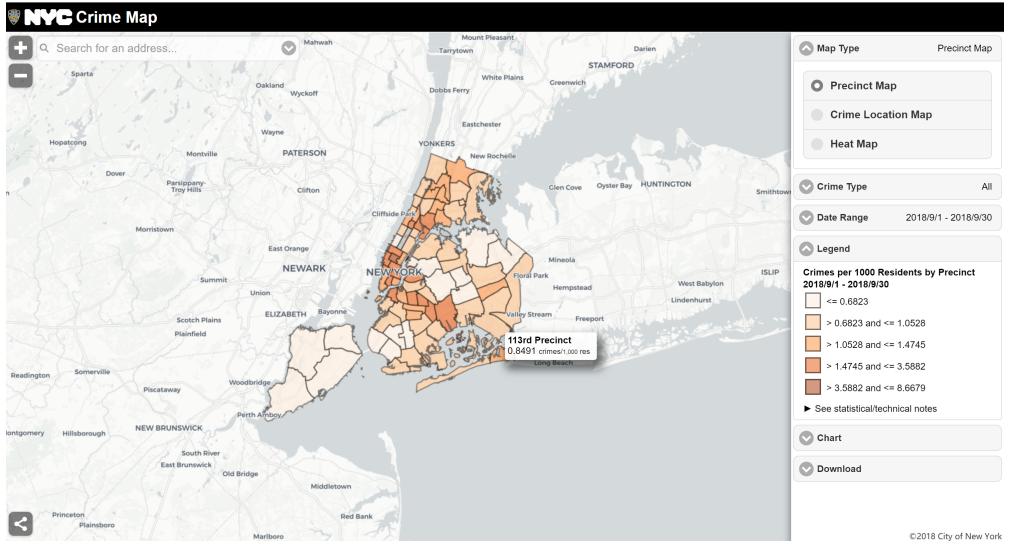
1. [New York City Crime](#)
2. [Taxi; Subway](#)
3. [Tweet Context \(traffic\)](#)

Tools

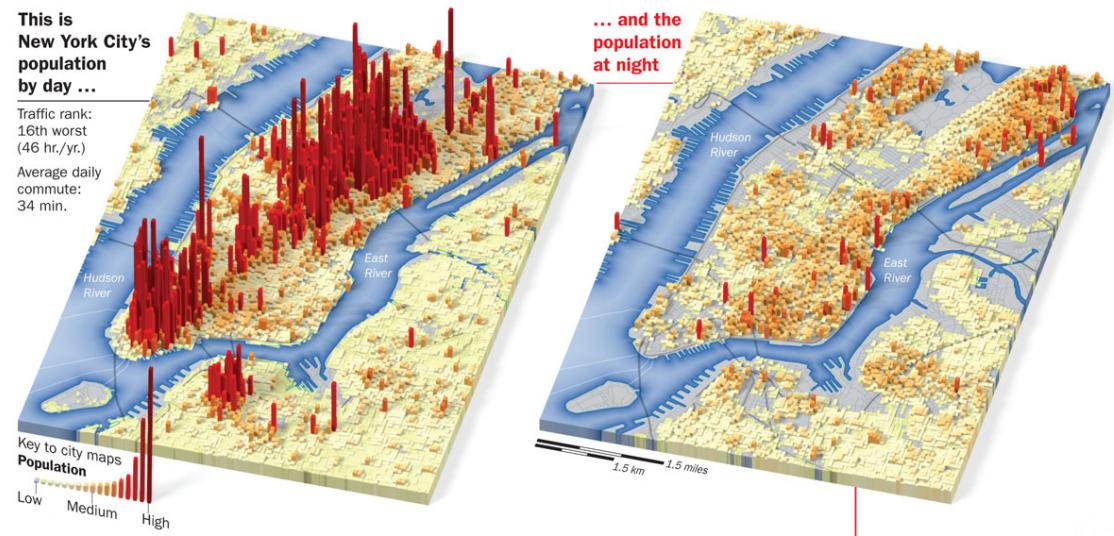
- html
- d3.js
- javascript
- dimple.js
- css
- nodejs
- Natural Language Processing

Algorithm

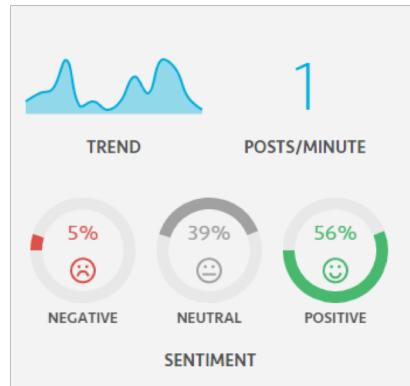




Crime Map [1]



Transportation Map [2]



Sentiment Analysis of Twitter [3]

Reference:[1] <https://maps.nyc.gov/crime/>

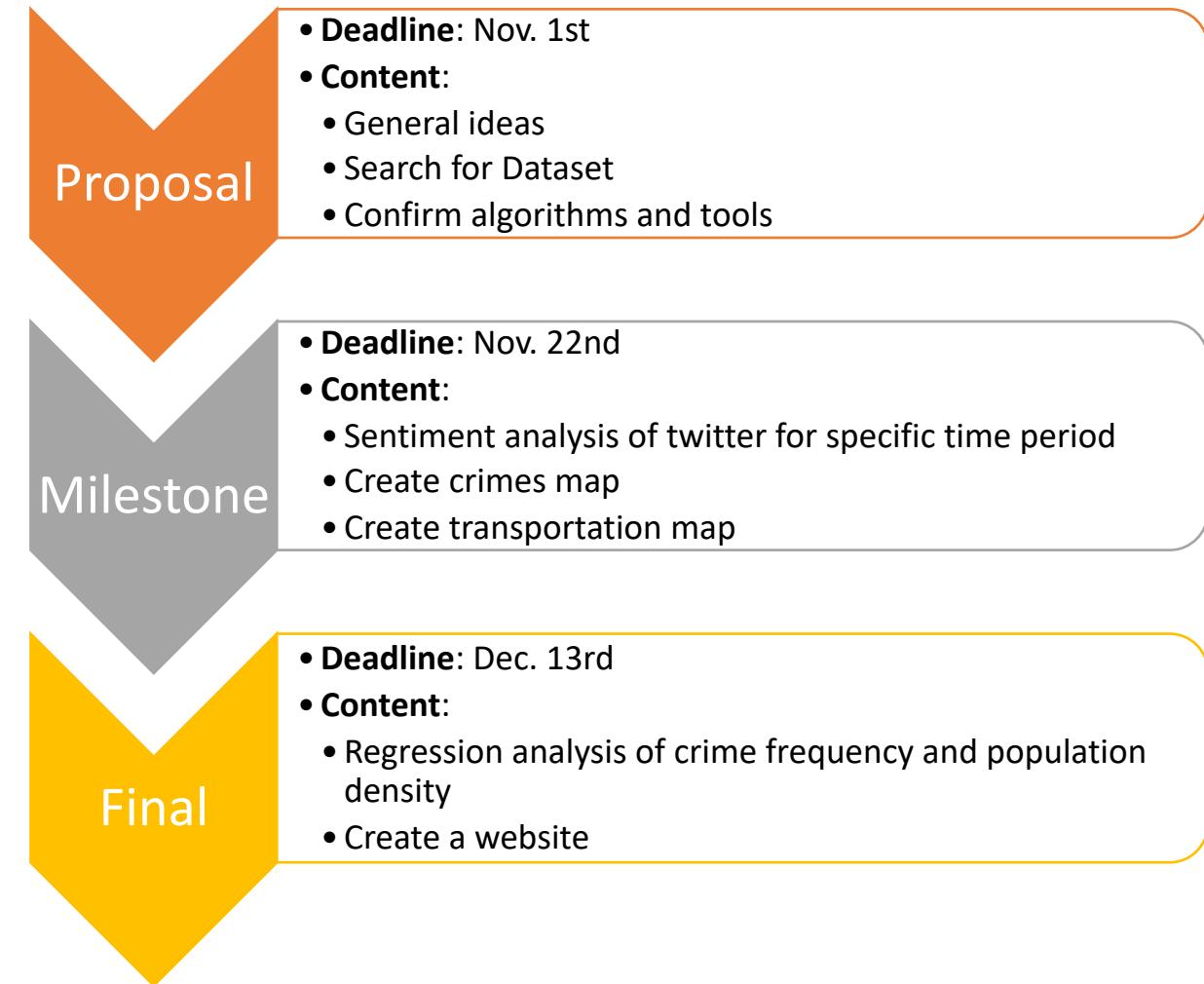
[2] <https://imgs.6sqft.com/wp-content/uploads/2015/07/20212442/New-york-city-population-day-versus-night.jpg>

[3] <https://pbs.twimgimg.com/media/B09cXdeCIAAS9zf.png>

Expected Contributions and Timeline

Contribution

- Yunan LU
 - Crimes Map
Draw the crimes flow hour by hour using histogram and combine with the transportation
- Zhicheng Ding
 - Transportation Map
Draw the transportation trajectory of bus, taxi and subway
 - Regression analysis
The relationship between population flow and criminal rate
- Lin Bai
 - Sentiment Analysis
Sentiment analysis of Twitter based on the time



Youtube link: public

https://youtu.be/vOyisfkSr_E