Manhattan's Safest Neighborhood

SEAN BROWN

NOVEMBER 15, 2019

Introduction

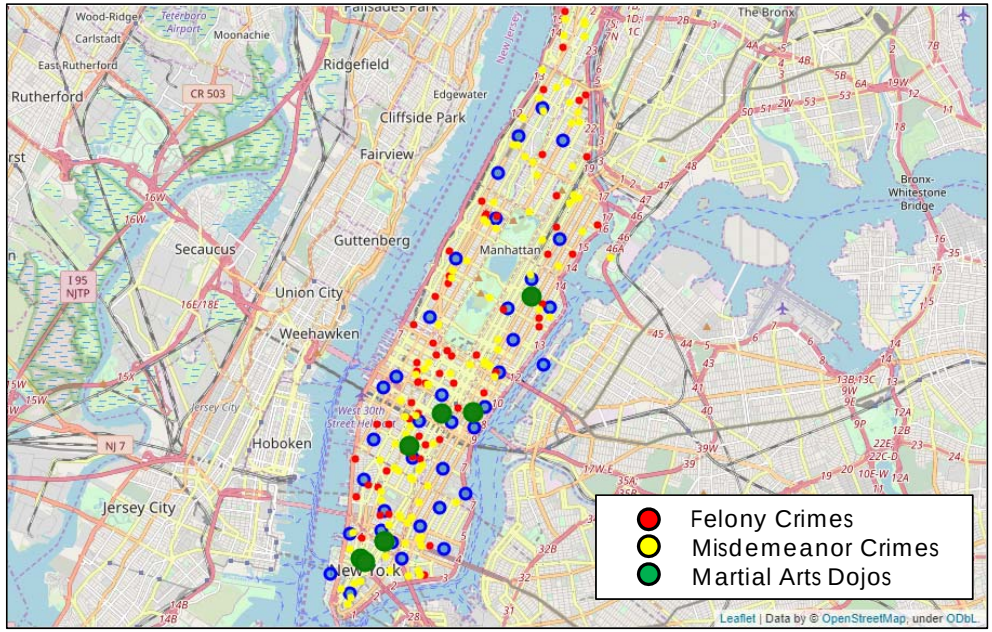
- **Background**
  - New York City is composed of five boroughs, Manhattan, Brooklyn, the Bronx, Queens, and Staten Island, each composed of several neighborhoods with diverse cultures and lifestyles.
- **Problem**
  - A new President of Finance has been hired by an investment bank in Manhattan and must decide which neighborhood he should relocate his family to from his current home in San Francisco.
  - The President's ideal living location minimizes proximity to crime and maximizes proximity to martial arts dojos, his favorite pastime.
- **Interest**
  - The analysis provides a quantitative method for measuring each Manhattan neighborhood's suitability for the President as well as any for any other potential Manhattan resident.

Data Acquisition and Cleaning

- **Neighborhood Data**
  - NYU Spatial Data Repository
  - Includes latitude and longitude for neighborhoods in each of New York City's five boroughs.
- **Crime Data**
  - Kaggle
  - Included felony and misdemeanor crimes in New York City from 2014-2015 and their locations
- **Dojo Data**
  - Foursquare Places API
  - Gathered venue data for Manhattan, including longitude and latitude and types of venues
- Cleaned data to capture only information relevant to Manhattan in the year 2015

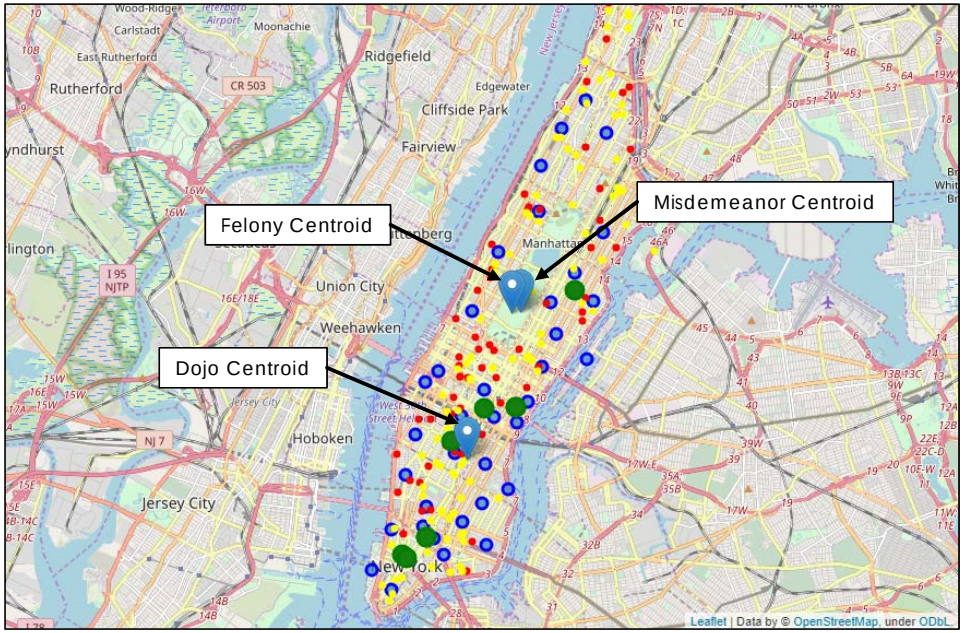
Dataset Map

- Datasets mapped using longitude and latitude data



Dataset Centroids

- Dataset centroids calculated using Centroid Equation and mapped.



Location Score Analysis

- Each neighborhood was given a location score using the following equation:

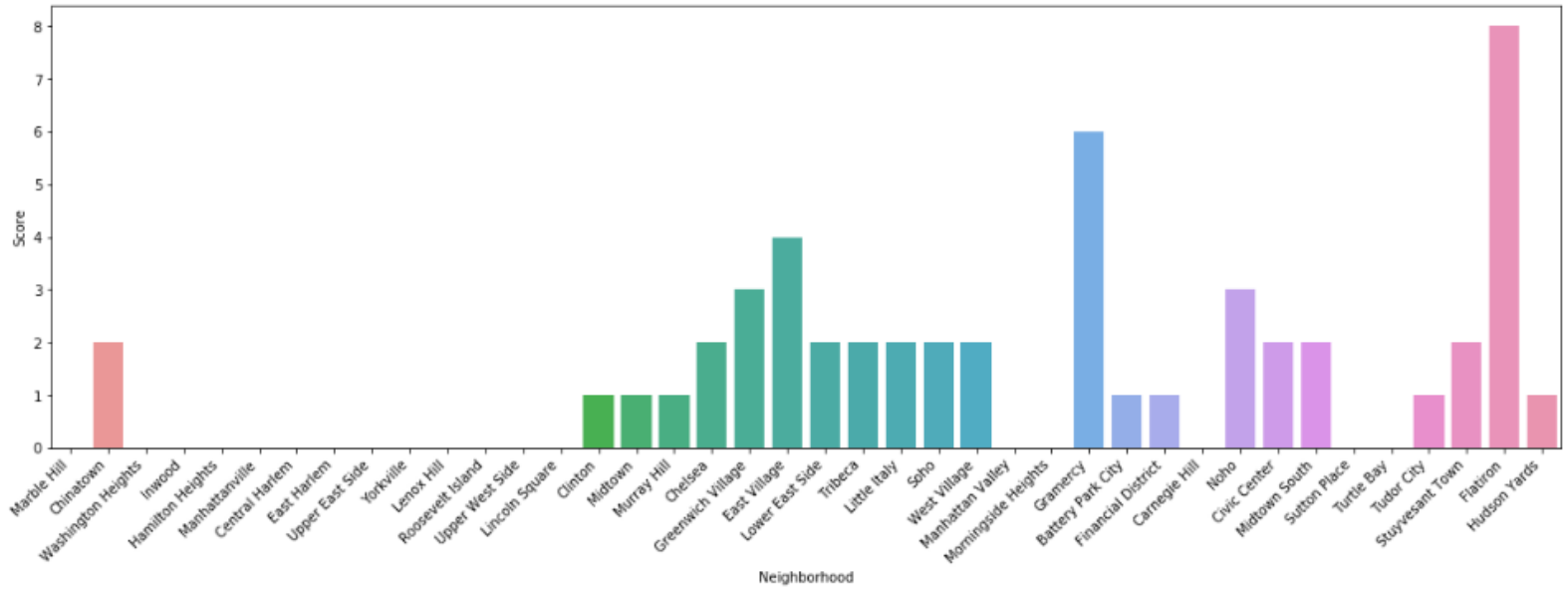
$$\text{Score} = \frac{(0.8 \times C_F + 0.2 \times C_M)}{C_D}$$

Where C_F is the distance to the centroid of Felony Crimes, C_M is the distance to the centroid of Misdemeanor crimes, and C_D is the distance to the centroid of dojos calculated as follows:

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

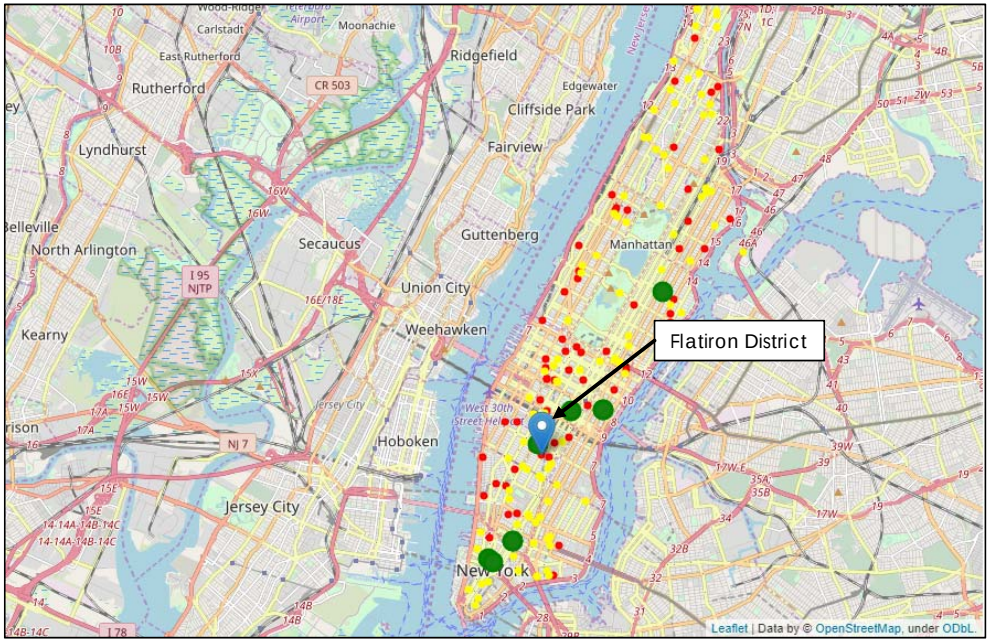
Location Score Analysis

- The location score of each neighborhood was plotted to determine the optimal location:



Result

- Flatiron District was the optimal location based on the location score.



Conclusion

- The purpose of this project was to identify a Manhattan neighborhood for an investment bank's new President of Finance that would be optimally located based on available crime data and proximity to martial arts dojos, the President's favorite pastime.

- Using data analytics and available Python libraries, it was determined that the best neighborhood for the President and his family would be **Flatiron**.