

Finding locations to open a gym in Brooklyn, NY

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Finding locations for Gym

- ▶ New location should be closer to Brooklyn city center & away from other gyms
- ▶ Goal: 5km from city center & 2.5km from closest gym
- ▶ Use Foursquare Places API for find the candidate neighborhood centers
- ▶ Director board of the fitness club group is interested in this project

Data

- ▶ Dataset should have neighborhood, latitude, longitude, of Brooklyn area
- ▶ New York University's spatial data repository has the data of New York city neighborhoods
- ▶ 70 neighborhoods with 4 features in Brooklyn
- ▶ Features: Borough, Neighborhood, Latitude, Longitude
- ▶ Explore venues & find cartesian coordinates & distance from city center

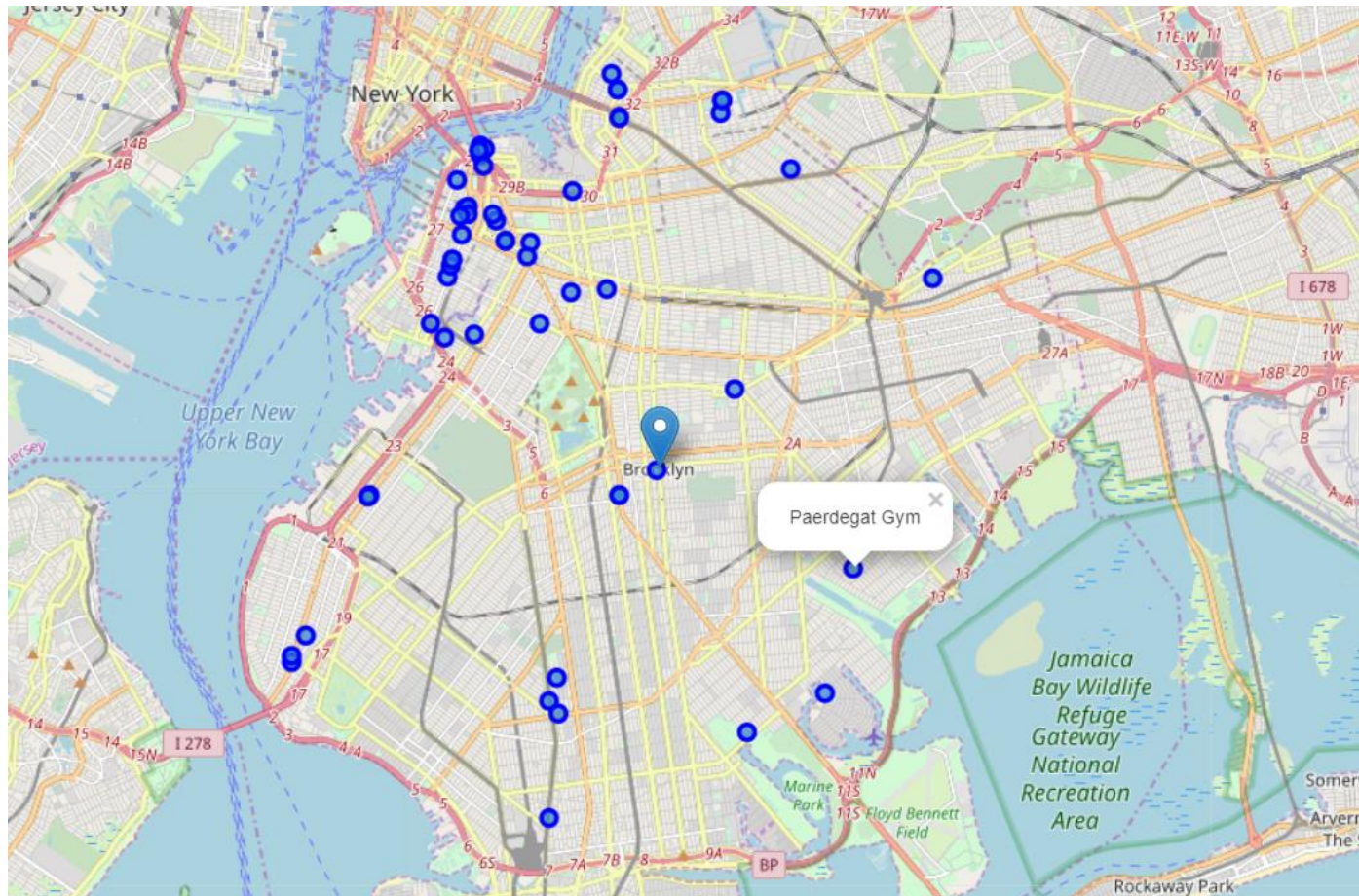
Visualization

Brooklyn city center & neighborhoods



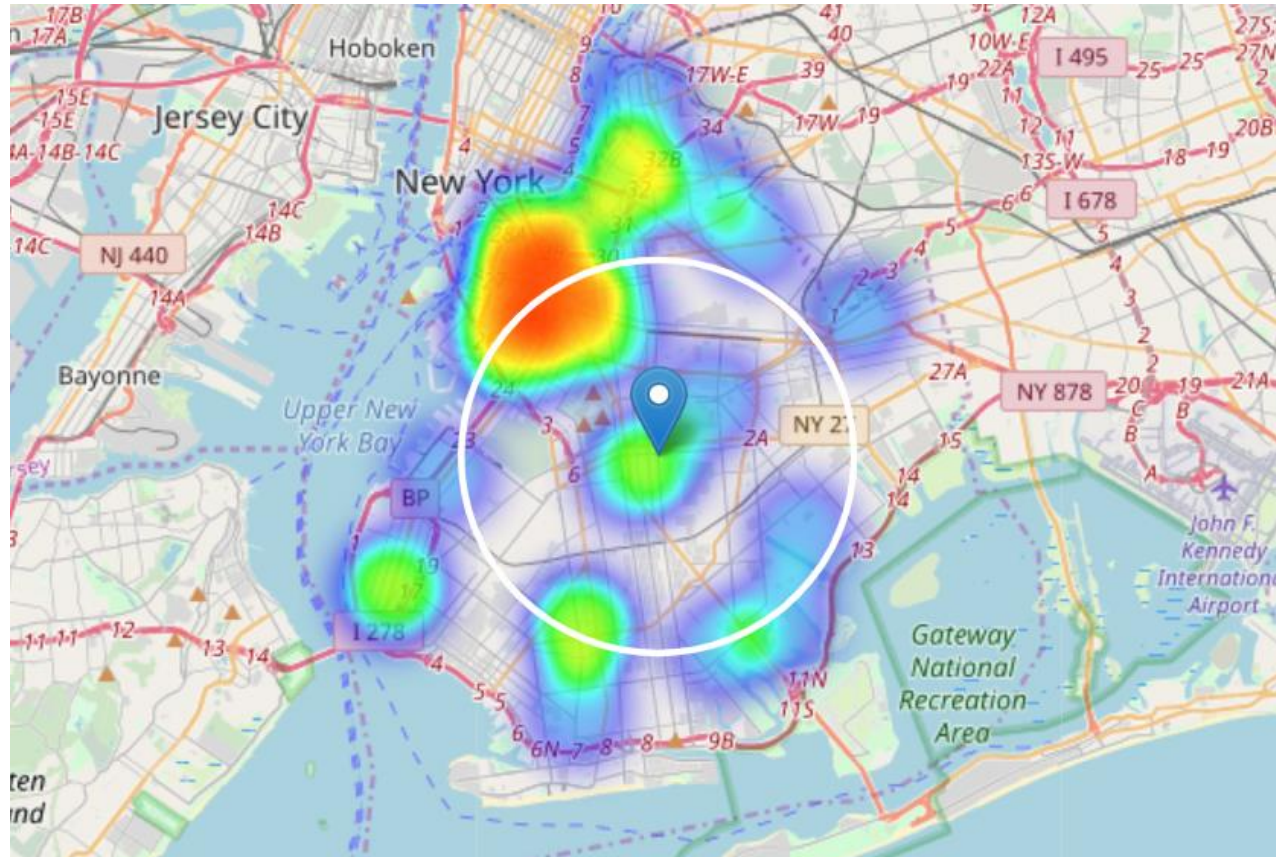
Explore neighborhoods using Foursquare

Using Foursquare Places API's 'explore' endpoint, get a list of recommended venues in each neighborhood and filter gyms.



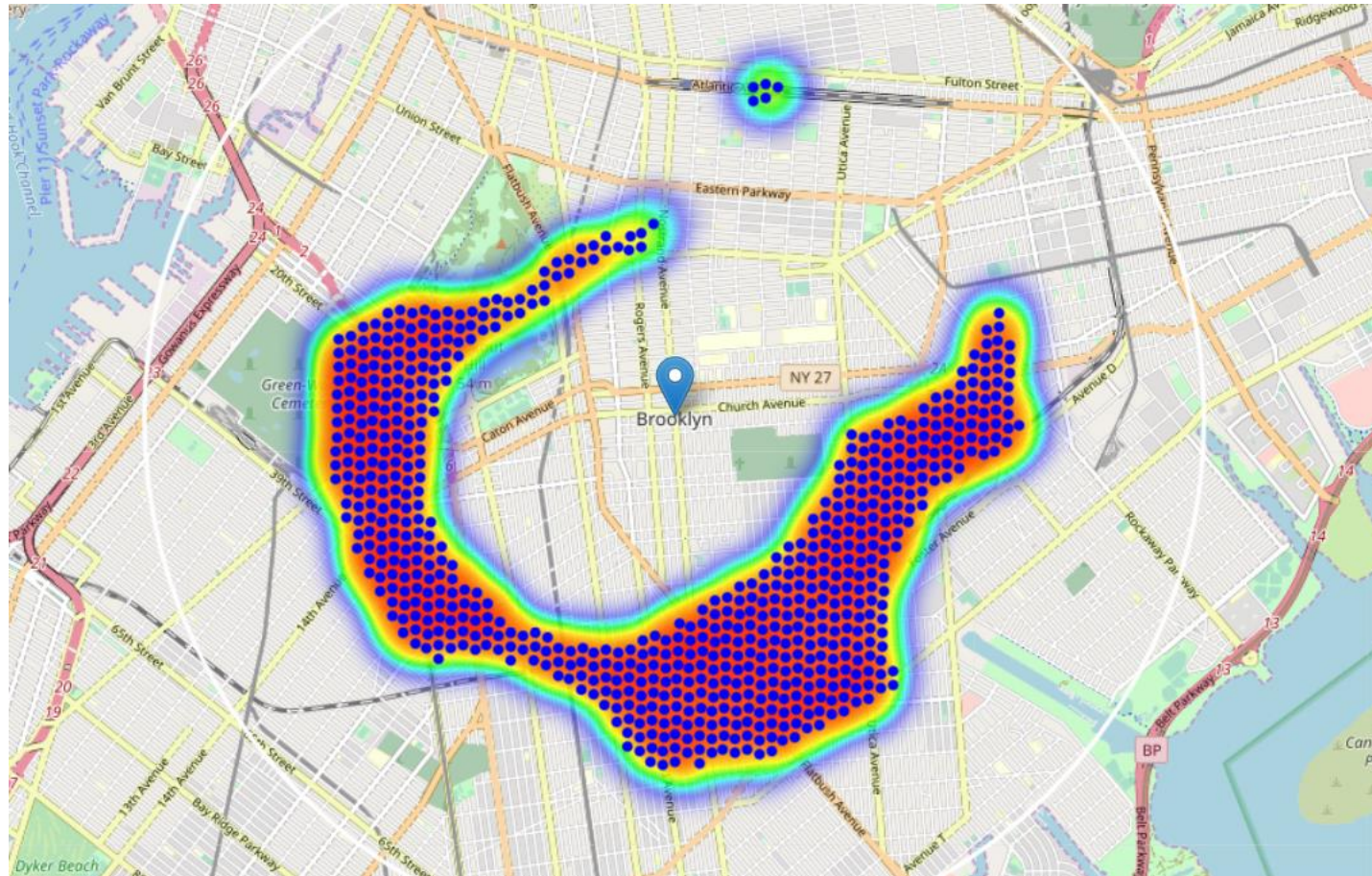
Analysis

The current density of gym/fitness centers in Brooklyn (Target area: 5km from city center)



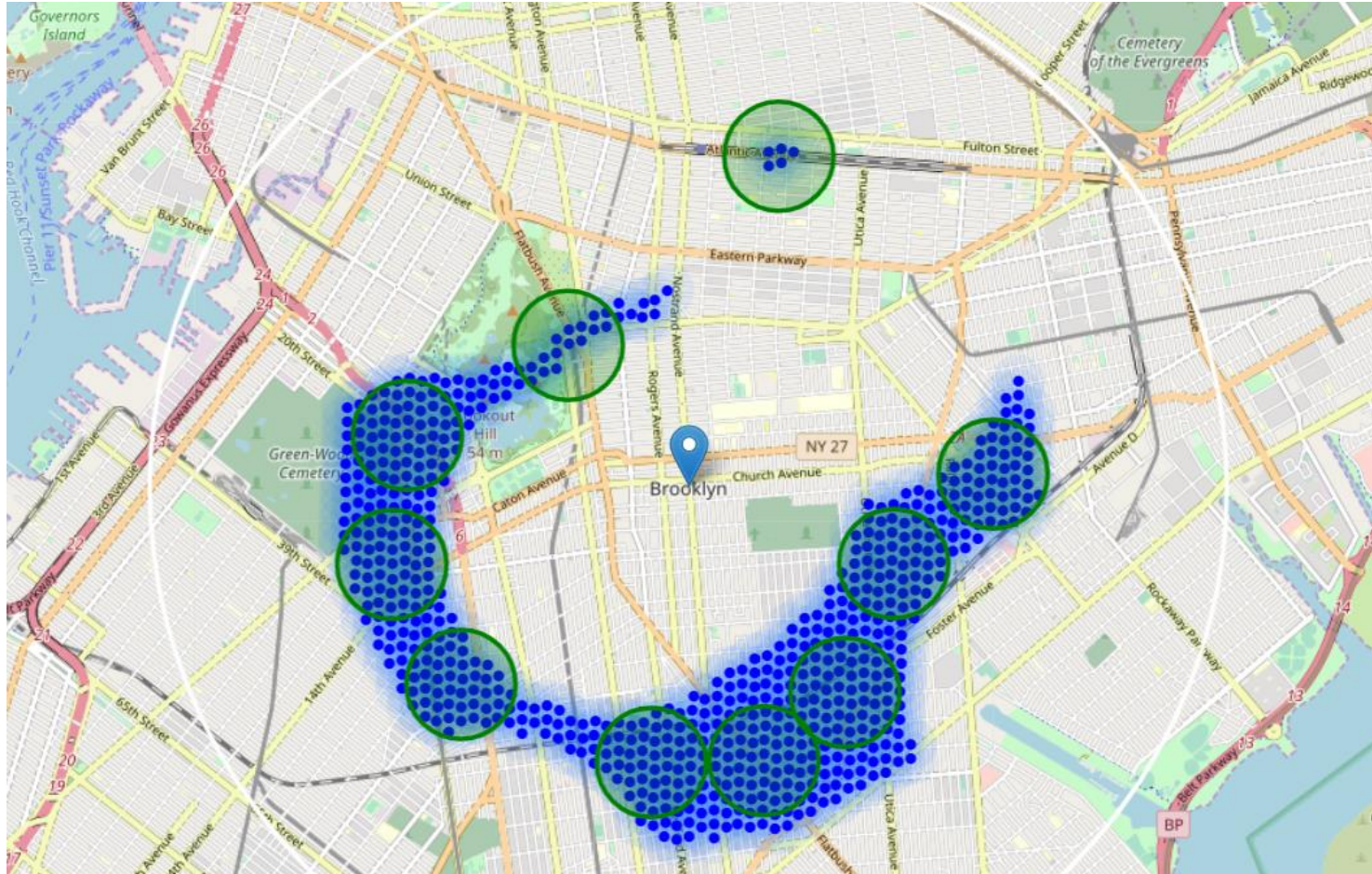
New location candidates

Denser grid of location candidates to open a new gym - 5km around Brooklyn city center and 2.5km away from an existing gym/fitness center



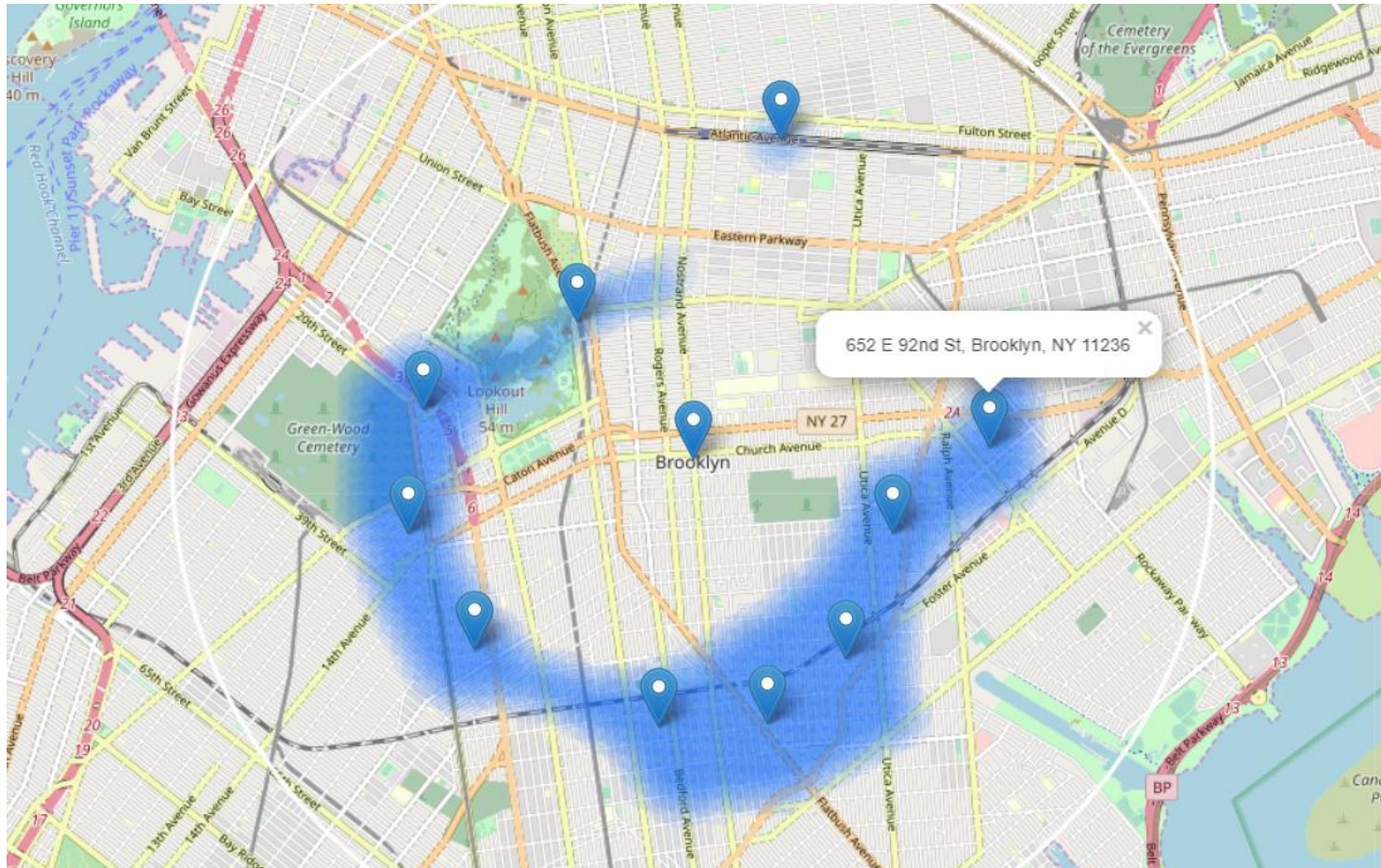
Clustering

Using K-Means clustering model, grouped the location candidates into 10 zones



Locations for new gym/fitness center

Centers of the location candidate zones are the recommended locations for a new gym



Results & conclusion

Addresses of the locations using **Google Map API reverse geocoding**

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Addresses of centers of areas recommended for further analysis
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39 Ocean Ave, Brooklyn, NY 11225	=> 2.6km from Brooklyn center
3602 Avenue J, Brooklyn, NY 11210	=> 4.0km from Brooklyn center
638 E 53rd St, Brooklyn, NY 11203	=> 3.1km from Brooklyn center
401 Avenue F, Brooklyn, NY 11218	=> 4.3km from Brooklyn center
48 Clara St, Brooklyn, NY 11218	=> 4.4km from Brooklyn center
4524 Glendale Ct, Brooklyn, NY 11234	=> 3.7km from Brooklyn center
652 E 92nd St, Brooklyn, NY 11236	=> 4.3km from Brooklyn center
1562 Atlantic Ave, Brooklyn, NY 11213	=> 4.9km from Brooklyn center
593 20th St, Brooklyn, NY 11218	=> 4.1km from Brooklyn center
951 E 23rd St, Brooklyn, NY 11210	=> 3.9km from Brooklyn center

Results & conclusion

- ▶ Clearly identified areas with lower density of gym/fitness centers in Brooklyn
- ▶ Created a dense grid of location candidates spaced 200m apart
- ▶ Used machine learning model **K-Means Clustering** cluster the location candidates
- ▶ We used **Google Map API reverse geocoding** to generate the addresses of the 10 zone centers
- ▶ Consider the recommendations as a good starting point. And consider specific characteristics of the neighborhood