

# 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 & 2.75km 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

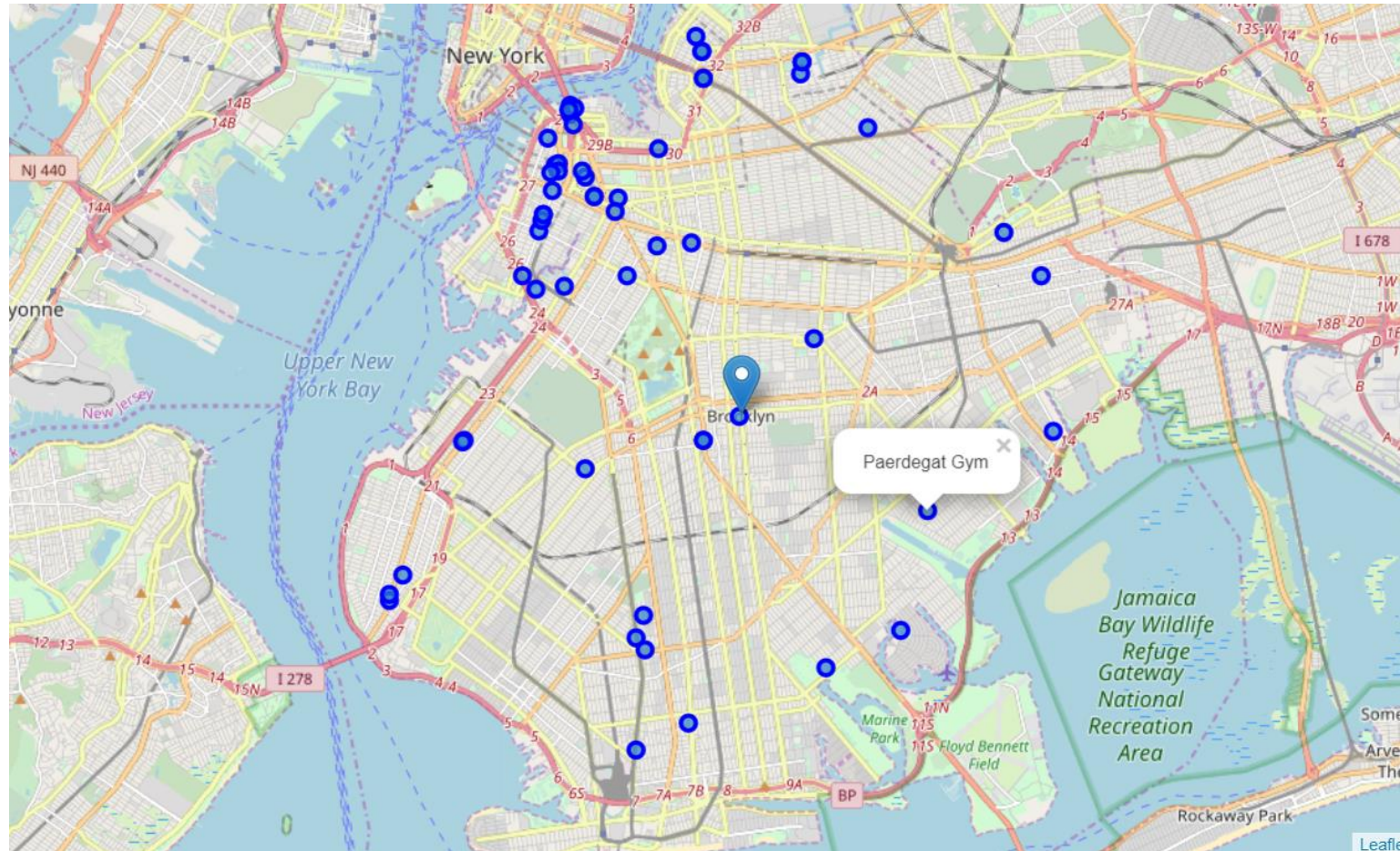
Brooklyn city center & neighborhoods





# Explore neighborhoods using Foursquare

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



# Analysis

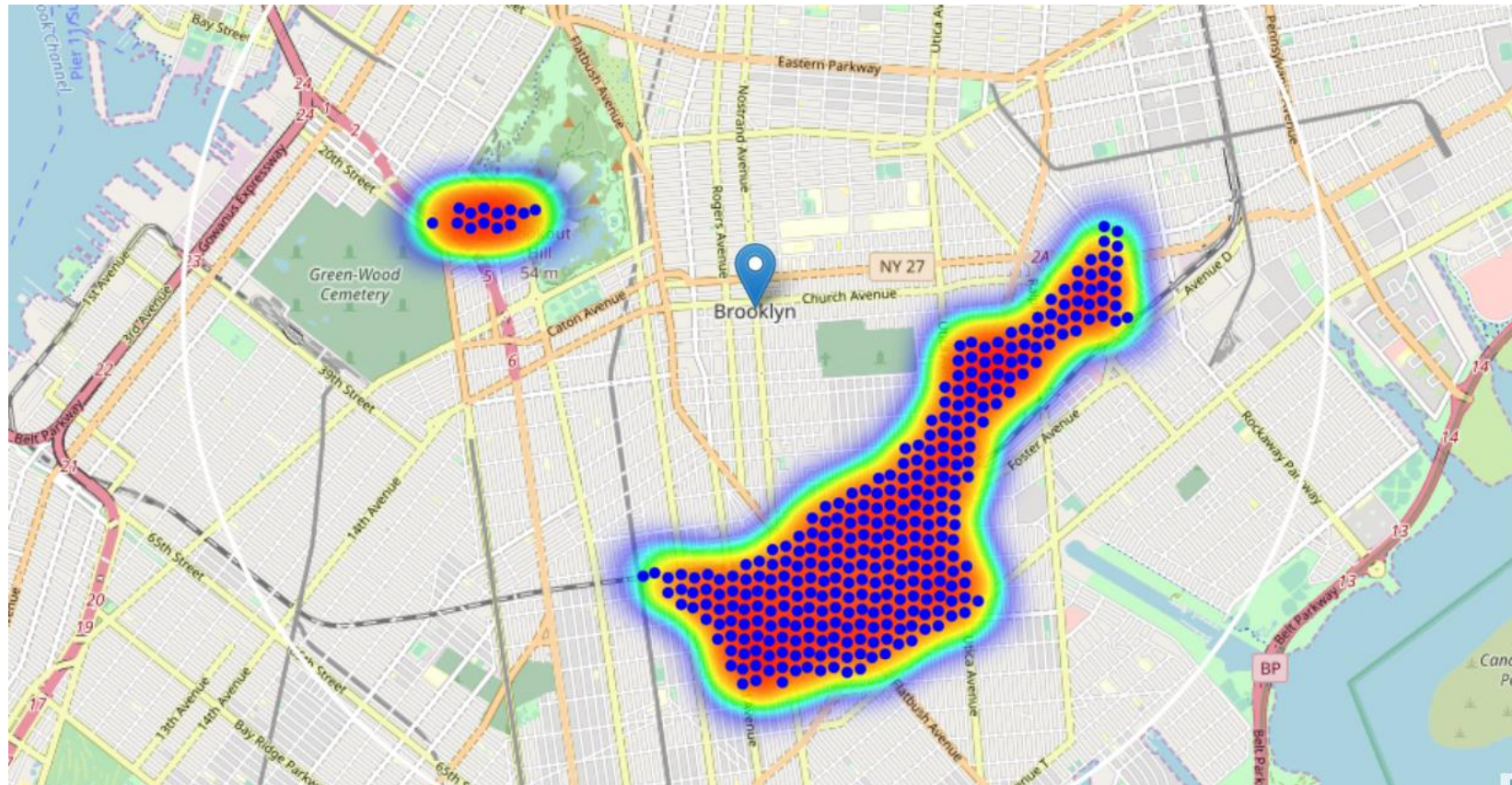
The current density of gym/fitness centers in Brooklyn (Target area: 5km from city center)





# New location candidates

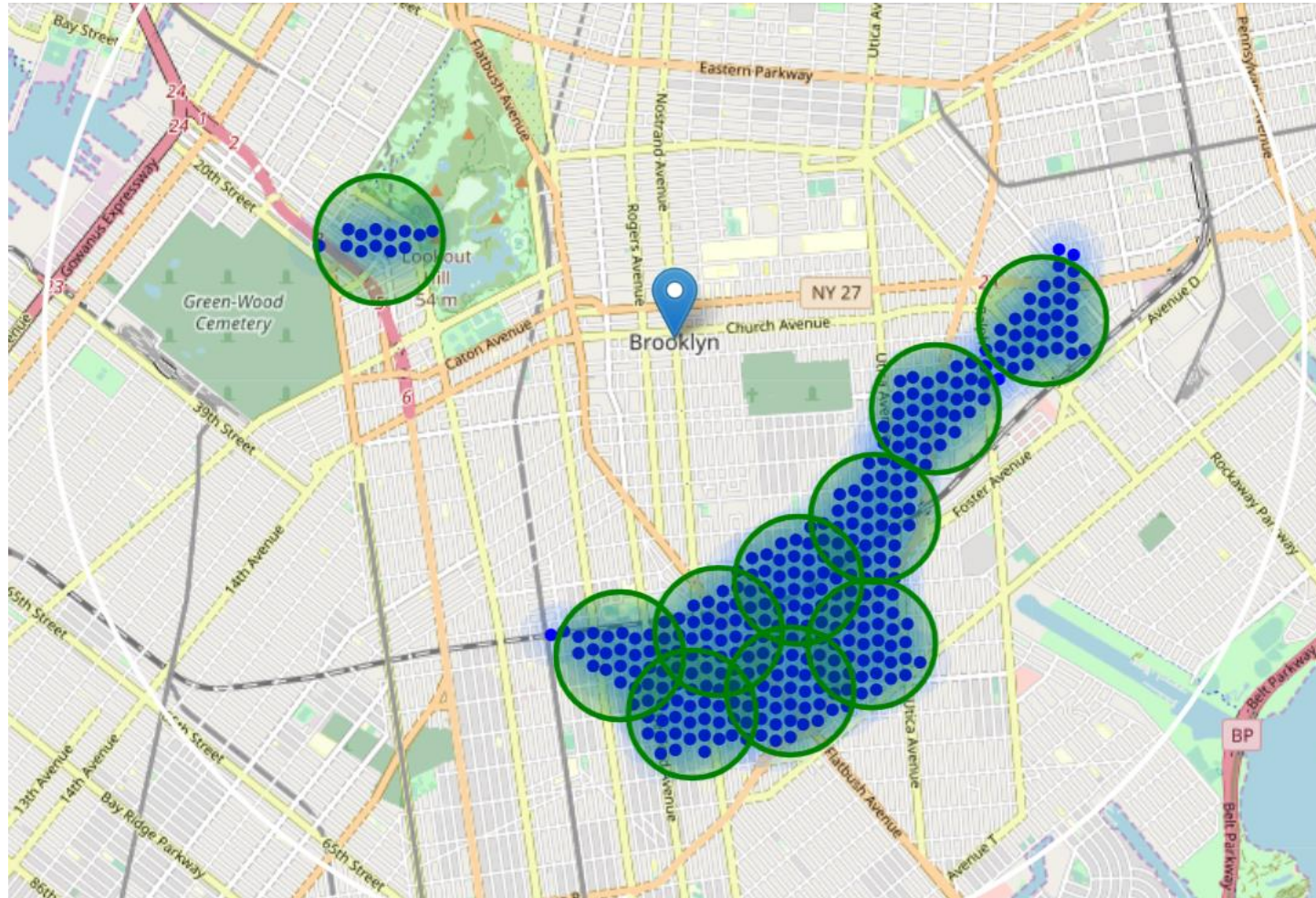
Denser grid of location candidates to open a new gym - 5km around Brooklyn city center and 2.75 away from an existing gym/fitness center





# Clustering

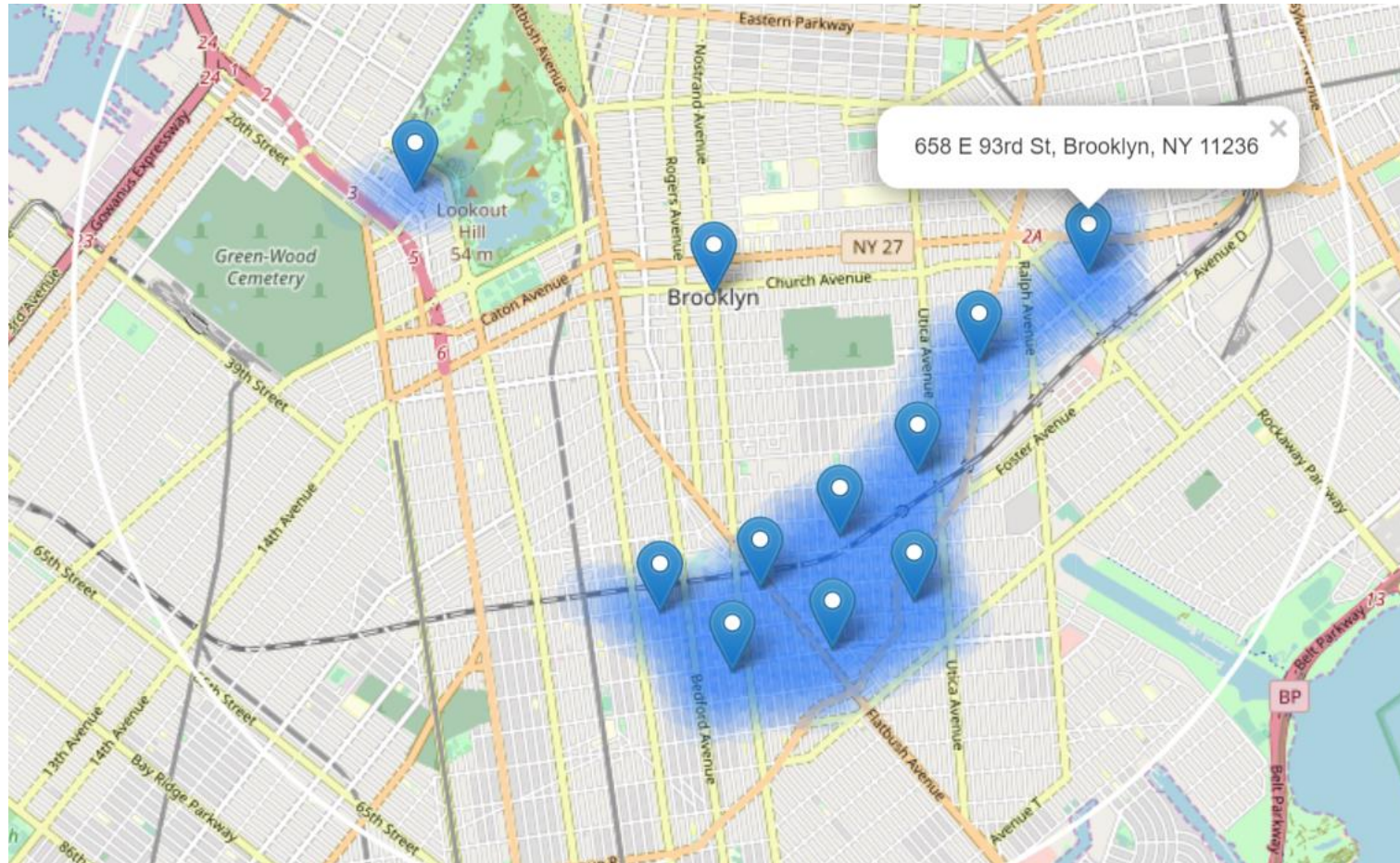
Using **K-Means clustering** model, grouped the location candidates into 10 zones





# 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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1125 E 28th St, Brooklyn, NY 11210	=> 4.5km from Brooklyn center
5520 Kings Hwy, Brooklyn, NY 11203	=> 3.3km from Brooklyn center
51 Sherman St, Brooklyn, NY 11215	=> 3.8km from Brooklyn center
915 E 40th St, Brooklyn, NY 11210	=> 3.3km from Brooklyn center
658 E 93rd St, Brooklyn, NY 11236	=> 4.5km from Brooklyn center
1800 Schenectady Ave, Brooklyn, NY 11234	=> 4.4km from Brooklyn center
3115 Avenue I, Brooklyn, NY 11210	=> 3.6km from Brooklyn center
979 E 48th St, Brooklyn, NY 11203	=> 3.2km from Brooklyn center
1282 E 39th St, Brooklyn, NY 11210	=> 4.5km from Brooklyn center
997 E 22nd 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