

AL KHOBAR RENTABILITY STUDY

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INTRODUCTION



PREDICTING THE RENTABILITY IS APPRECIATED BY REAL ESTATE COMPANIES

- Al Khobar is a small city in Saudi Arabia with a total population of 219,679 and a total area of 571 square kilometers.
- A city with forty-one neighborhoods only.
- In a real estate project, location selection can be challenging.
- We will study the rentability of a store location in Al Khobar city in Saudi Arabia.



DATA



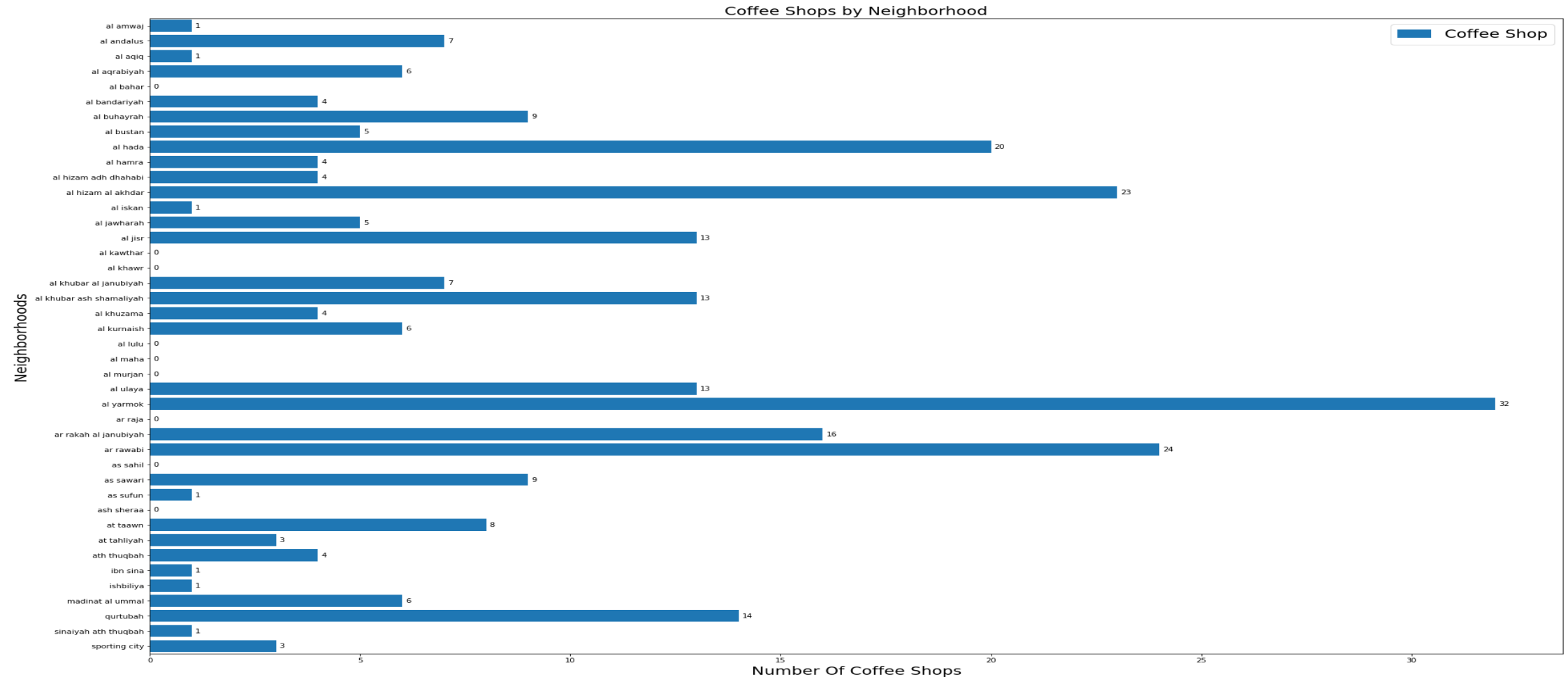
DATA SELECTION

- Location data for each neighborhood in my city I found it [here](#).
- The foursquare data as rented stores
- I found the data for the unrented or available stores which I scrapped from one of the most famous sites in Saudi Arabia for renting a place [Aqar](#).

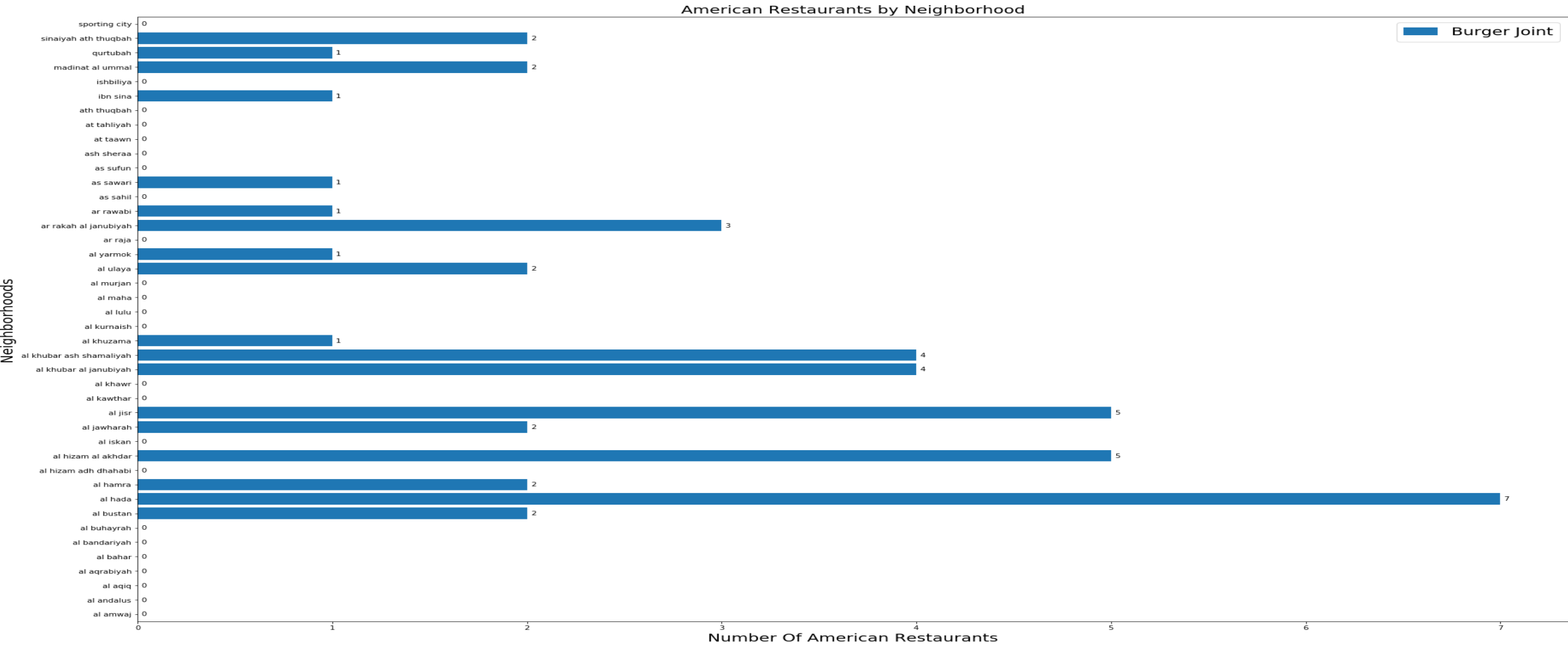
DATA CLEANING

- I found the coordinates for neighborhoods in Saudi Arabia but it was in SQL files format for cities and neighborhoods which made it really hard to process and open.
- I found a website that opens SQL files but it refused to run the create table query in the file so I had to copy it manually to a text file and turn it into a CSV file.
- For the Aqar data, the only location data that was available is the unofficial address in Arabic
- I needed to do a fuzzy match between the two data sets in order to obtain the coordinates of the neighborhood the spaces lie in.
- I had to randomize the location through a normal distribution with a mean as the center of the neighborhood and standard deviation as the third of distance between the center and the edges of the neighborhood in order to obtain a unique location for each data point.
- I added for each data set a target value of one for rented stores (the foursquare data) and a value of zero for unrented stores (the Aqar data).

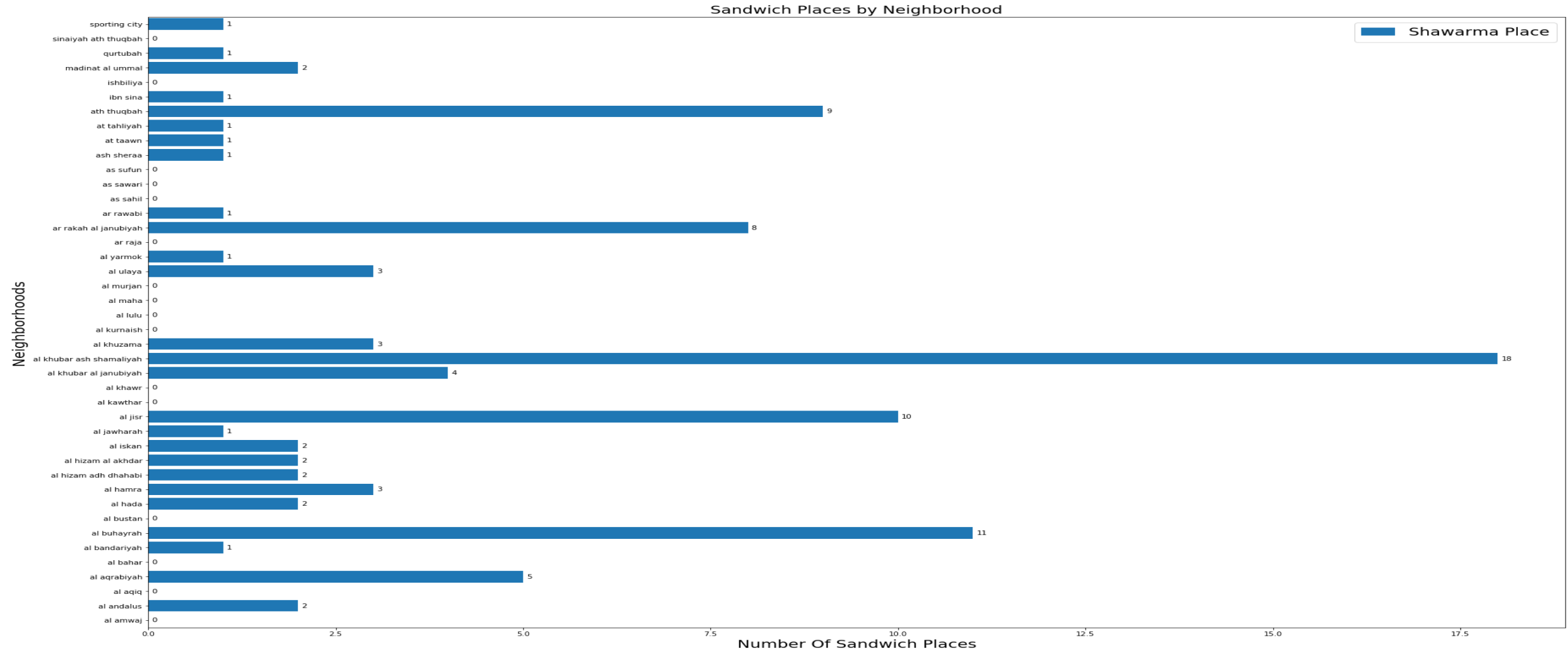
DATA EXPLORATION (COFFEE SHOPS)



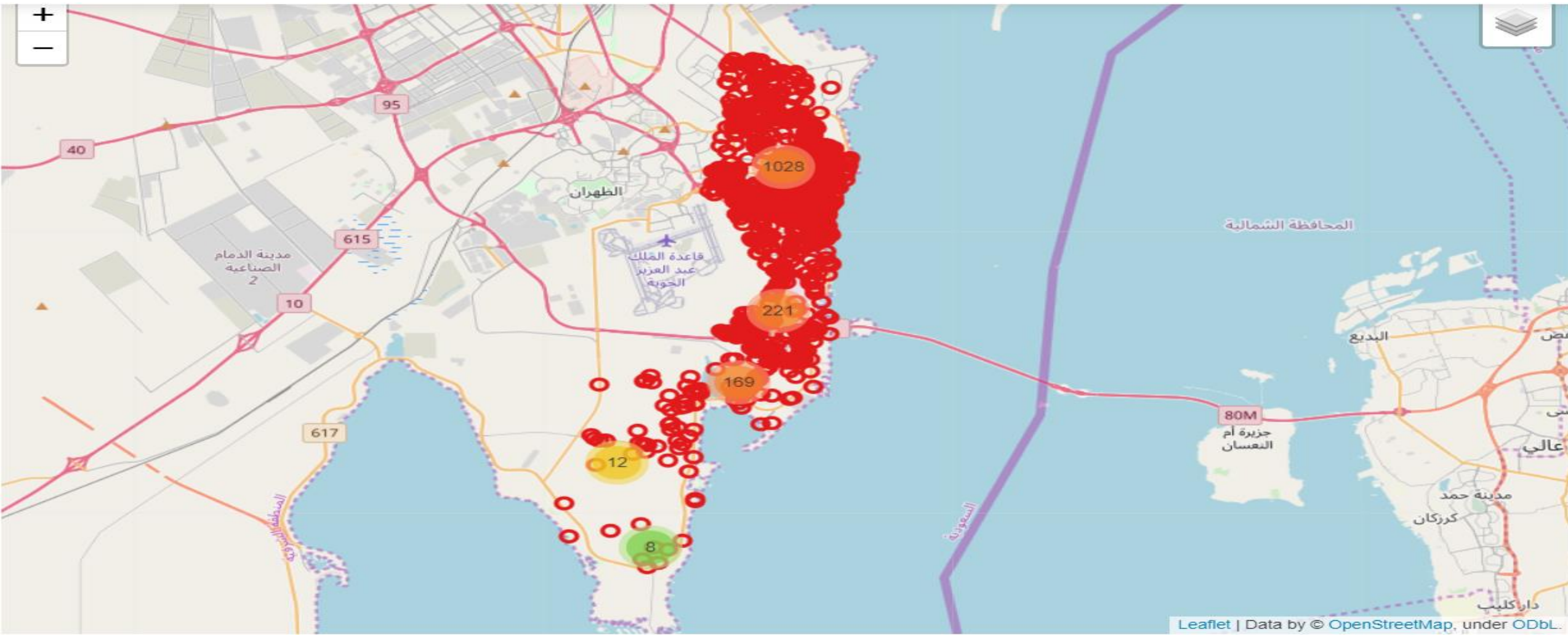
DATA EXPLORATION (BURGER JOINTS)



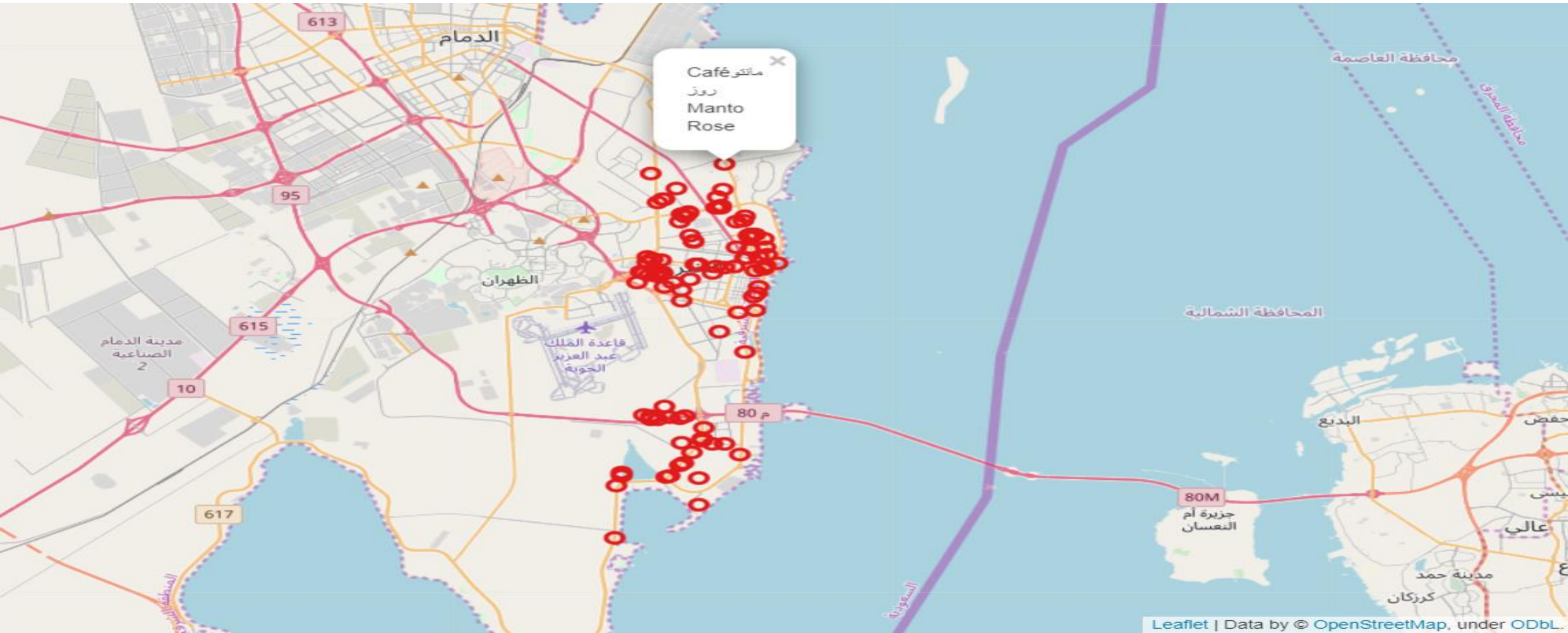
DATA EXPLORATION (SANDWICH PLACES)



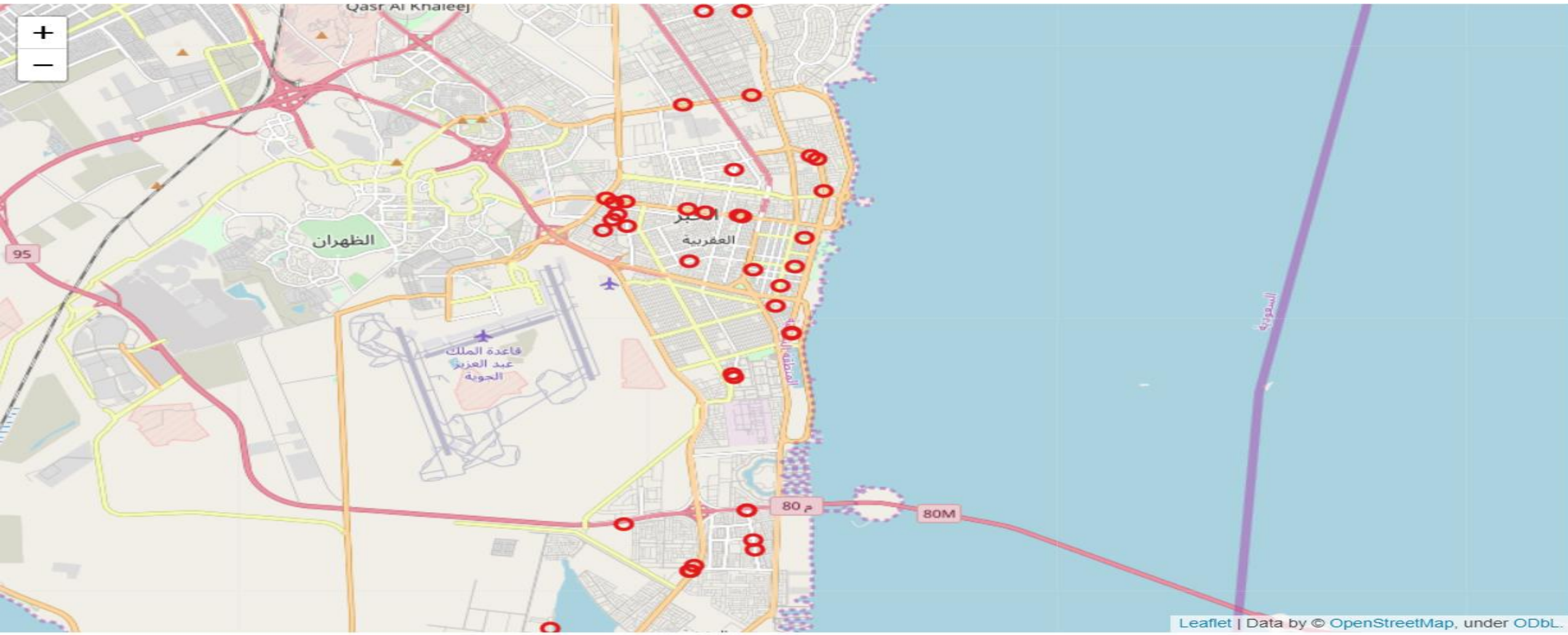
DATA EXPLORATION (ALL)



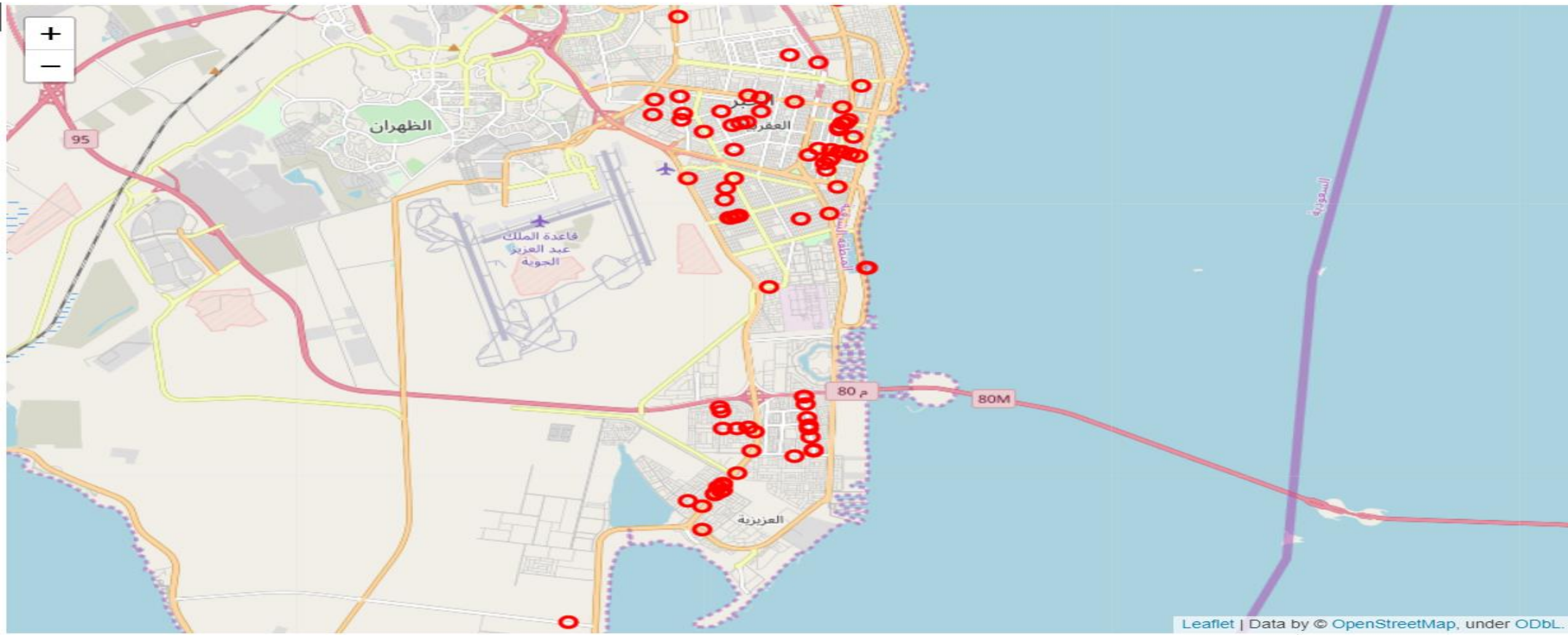
DATA EXPLORATION (COFFEE SHOPS)



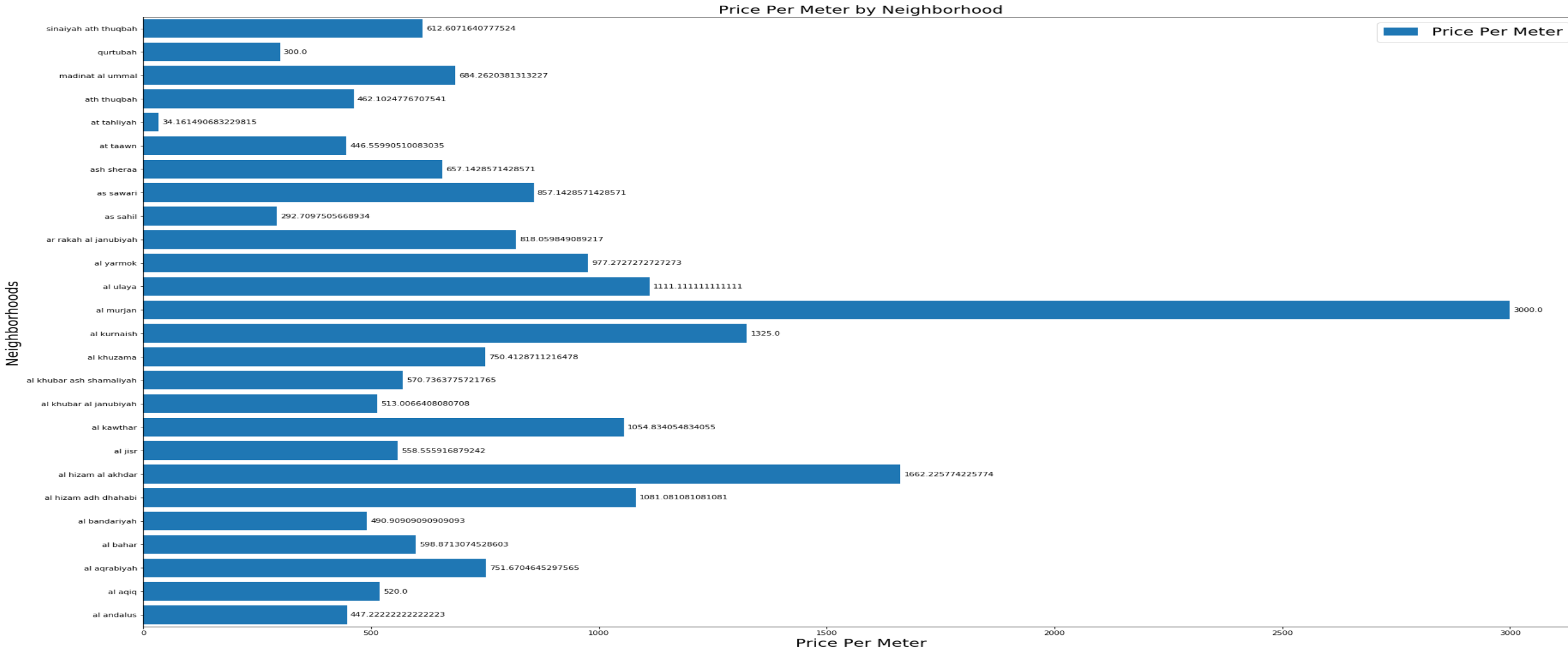
DATA EXPLORATION (BURGER JOINTS)



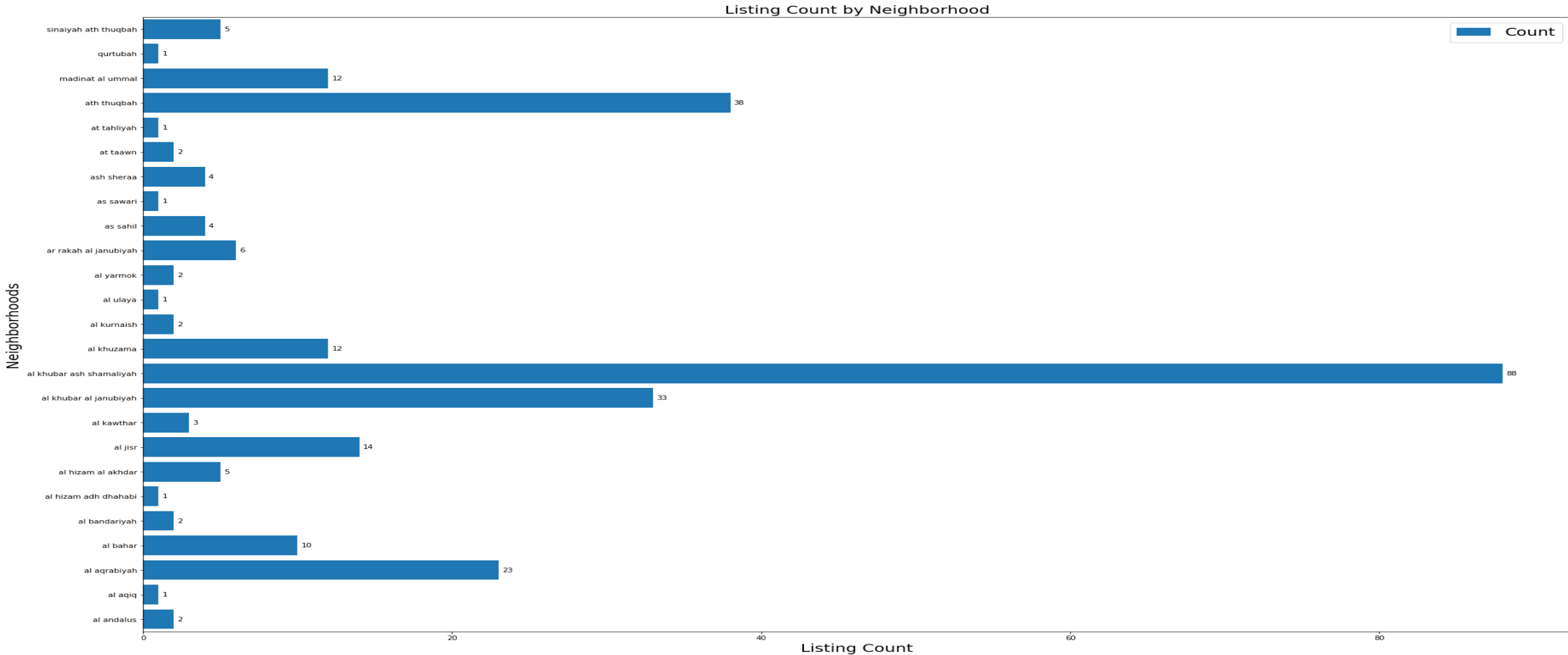
DATA EXPLORATION (SANDWICH PLACES)



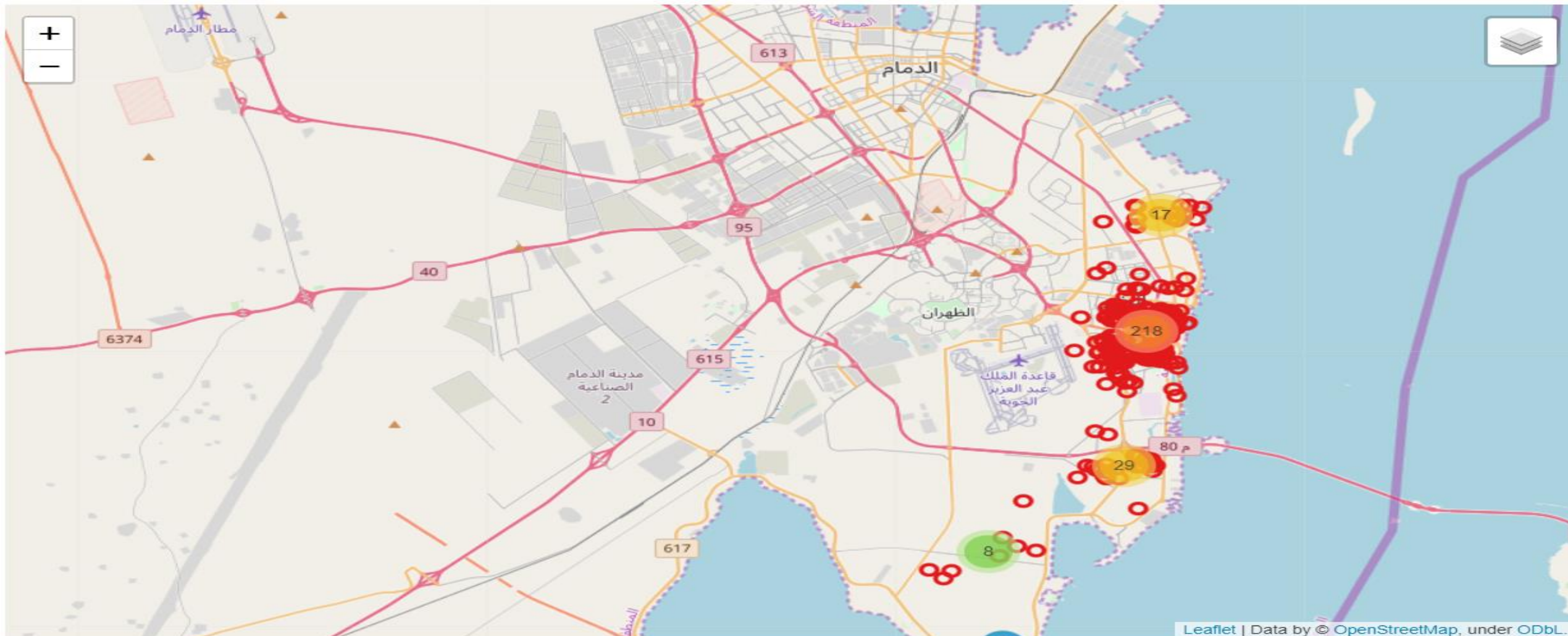
DATA EXPLORATION (PRICE PER METER)



DATA EXPLORATION (LISTING COUNT)



DATA EXPLORATION (LISTING MAP)





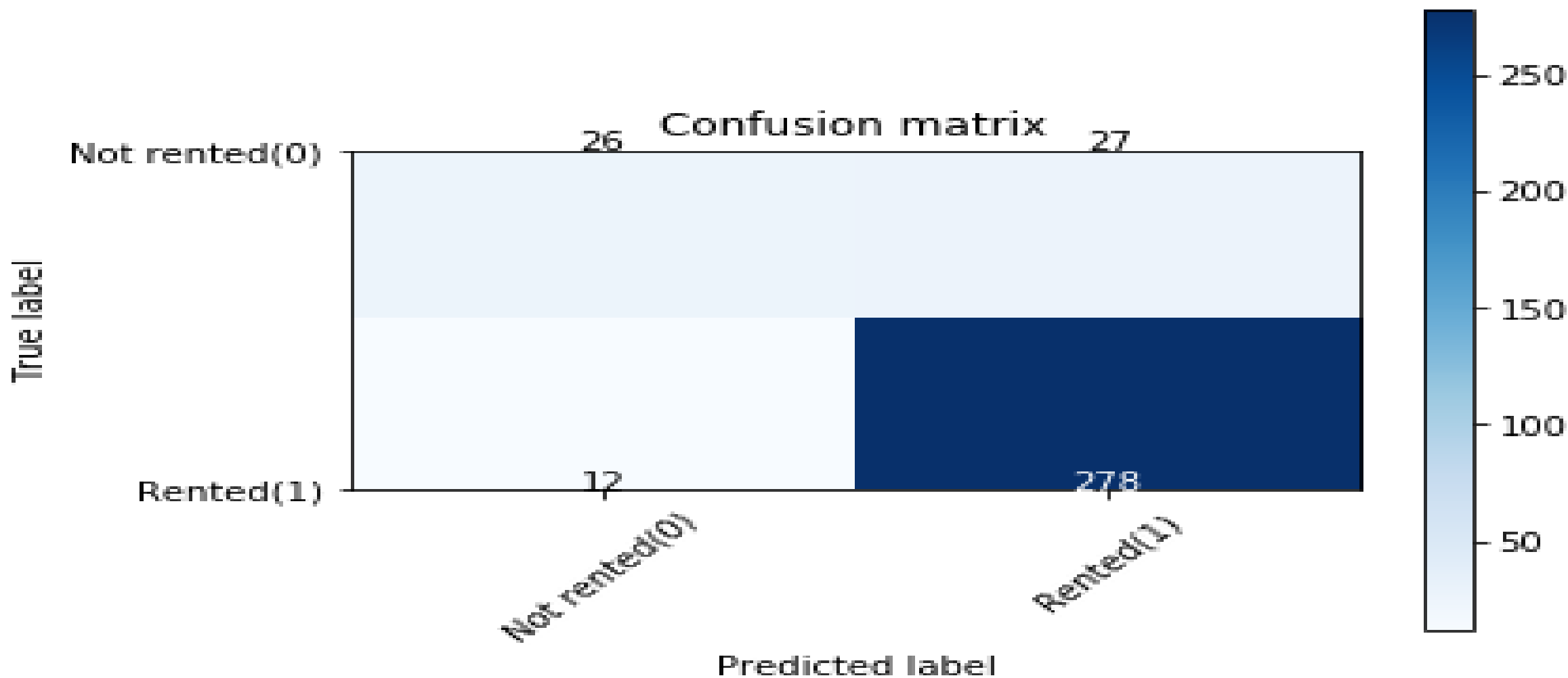
RESULTS



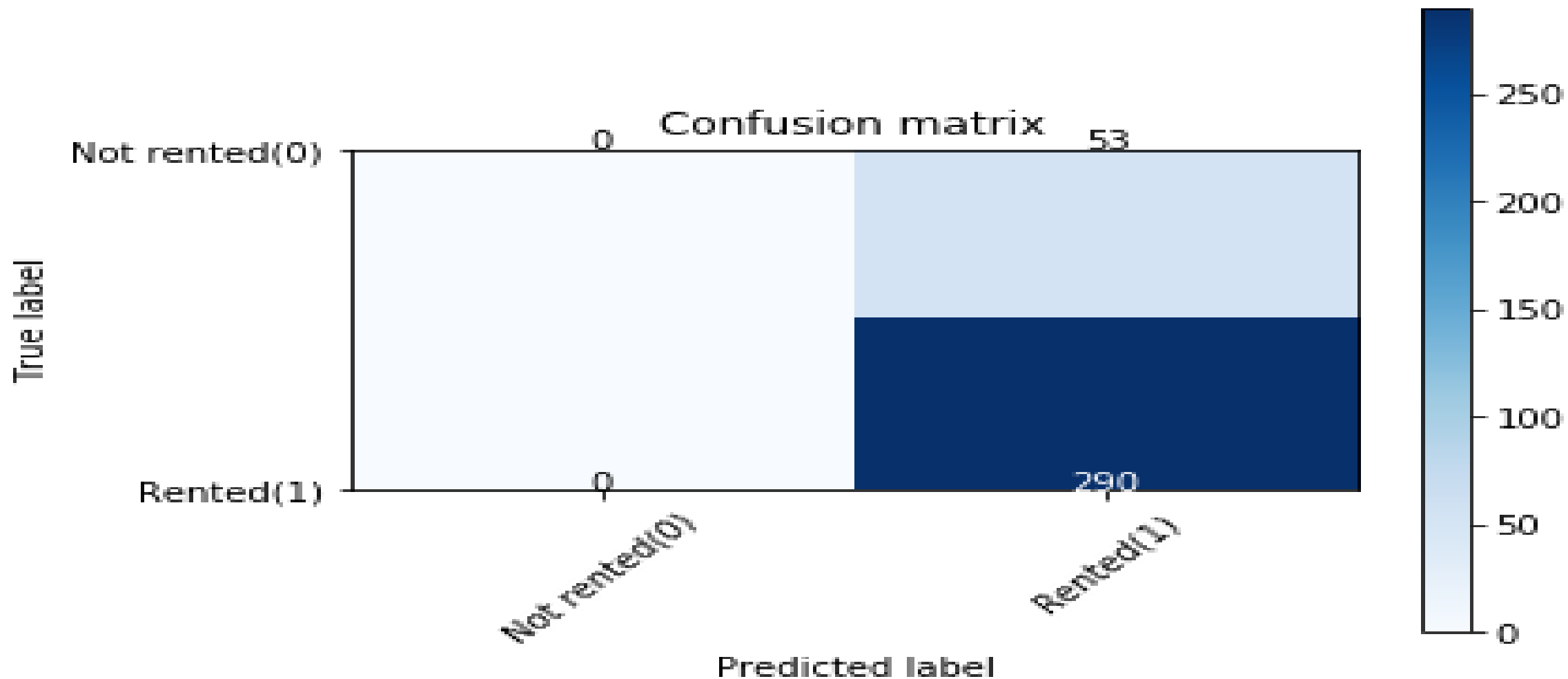
MODELS

Model	KNN	Logistic Regression	SVM
Model Specifications	<div>algorithm='auto',<div>metric='euclidean',<div>metric_params=None,<div>n_jobs=None, n_neighbors=3, p=2,<div>weights='distance'</div></div></div></div>leaf_size=30,</div>	C=0.0001, class_weight=None, dual=False, <div>fit_intercept=True, intercept_scaling=1,<div>l1_ratio=None, max_iter=100,<div>multi_class='warn', n_jobs=None,<div>penalty='l2', random_state=None,<div>solver='liblinear', tol=0.0001, verbose=0,<div>warm_start=False</div></div></div></div></div></div>	C=10, cache_size=200, class_weight=None,coef0=0.0, <div>decision_function_shape='ovr', degree=3,<div>gamma=1, kernel='rbf', max_iter=-1,<div>probability=False, random_state=None,<div>shrinking=True, tol=0.001,<div>verbose=False</div></div></div></div></div>
Accuracy	0.8862973760932945	0.8454810495626822	0.8483965014577259
F1	0.934453781512605	0.9162717219589257	0.9174603174603174
Jaccard Similarity	0.8862973760932945	0.8454810495626822	0.8483965014577259

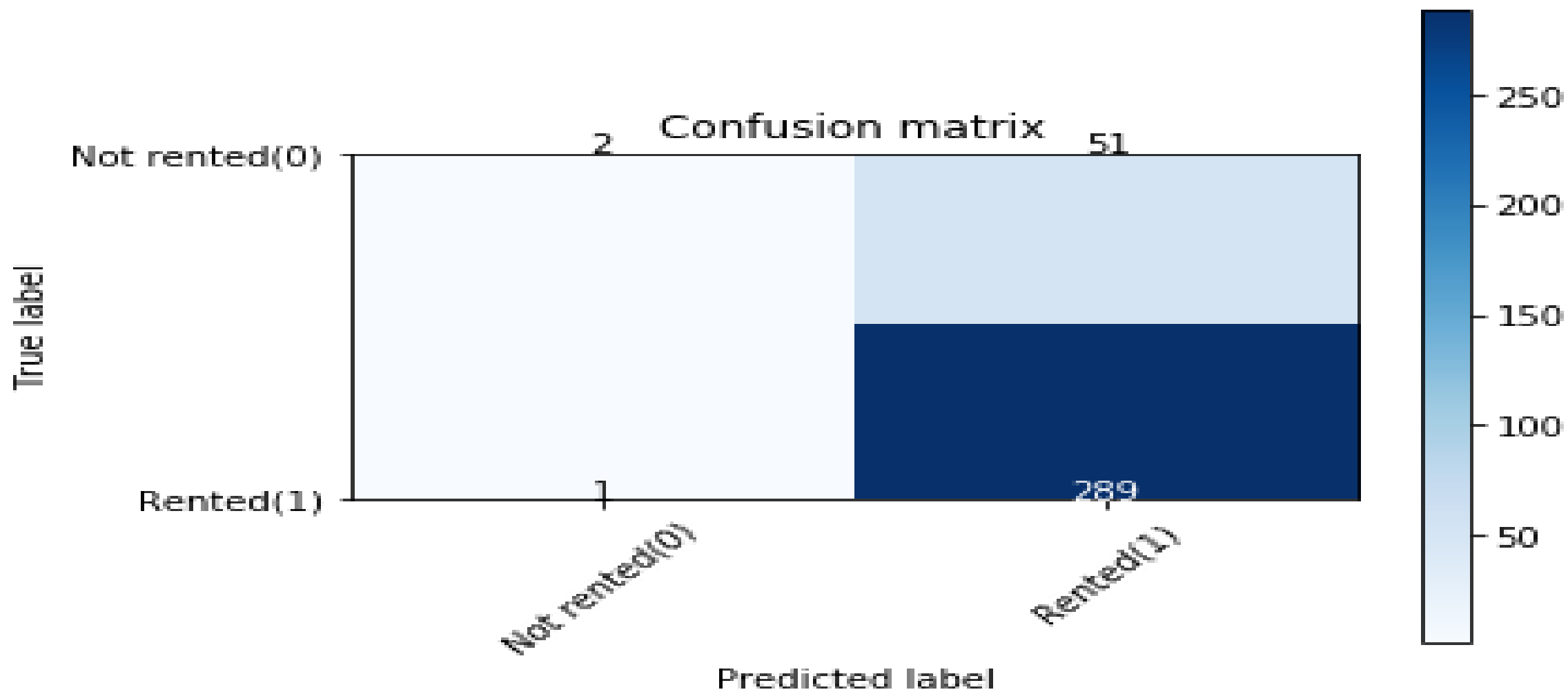
CONVOLUTION MATRIX (KNN)



CONVOLUTION MATRIX (LOGISTIC REGRESSION)



CONVOLUTION MATRIX (SVM)





CONCLUSION



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- We started with three data sets in order to obtain the location data for the rented places (Foursquare data) and unrented data (Aqar data)
- unrented data (Aqar data) was fuzzy matched with the neighborhood data in order to obtain there location
- The location data was randomized based on a normal distribution with a mean point as the center of the neighborhood and a standard deviation equal to the third of the distance between the center and the edge of the neighborhood.
- We then modeled the data using KNN model which was the best model with acceptable results given that the only inputs are the location data and those are randomize for the unrented location.