Capstone Project - The Battle of Neighborhoods

Intro:

The purpose of this projects is to cluster NY City to 4 Clusters by pizza places prices.

The Targeted people are the people who love pizza and wants to visit NY City and stay in a neighborhood that pizza prices in it fits his/her income.

Another way to put it:

Person X is wants to visit the City of his dream.. NY City,

X loves pizza,

X wants to stay with a neighborhood where pizza prices fits his income.

Data:

first of all you need to know that foursquare provides for every revenue a “price tag” from 1 to 4 , where 1 is the cheapest and 4 is the most expensive.

the data will be collected as this:

for every neighborhood in NY I will search in the area of 1000 meter for venues with 1,2,3,4 prices and count them so I get the number of places with "tag 1 price" in the neighborhood and number of places with "tag 2 price" in the neighborhood and so on…

the final data will be a data frame with 306 rows (number of NY neighborhoods)

each row has number of pizza places with tag 1->4 price.

Methodology:

There is no such a thing as all low prices neighborhood or all high prices neighborhood

In each neighborhood there are places with 1->4 price tags but the count of them varies from neighborhood to another,

So for each neighborhood I will use the count of places of each price tag as below as an input vector to a KMeans model (after Normalizing), and this will cluster the neighborhoods to something like :

“most likely to have cheap places” or

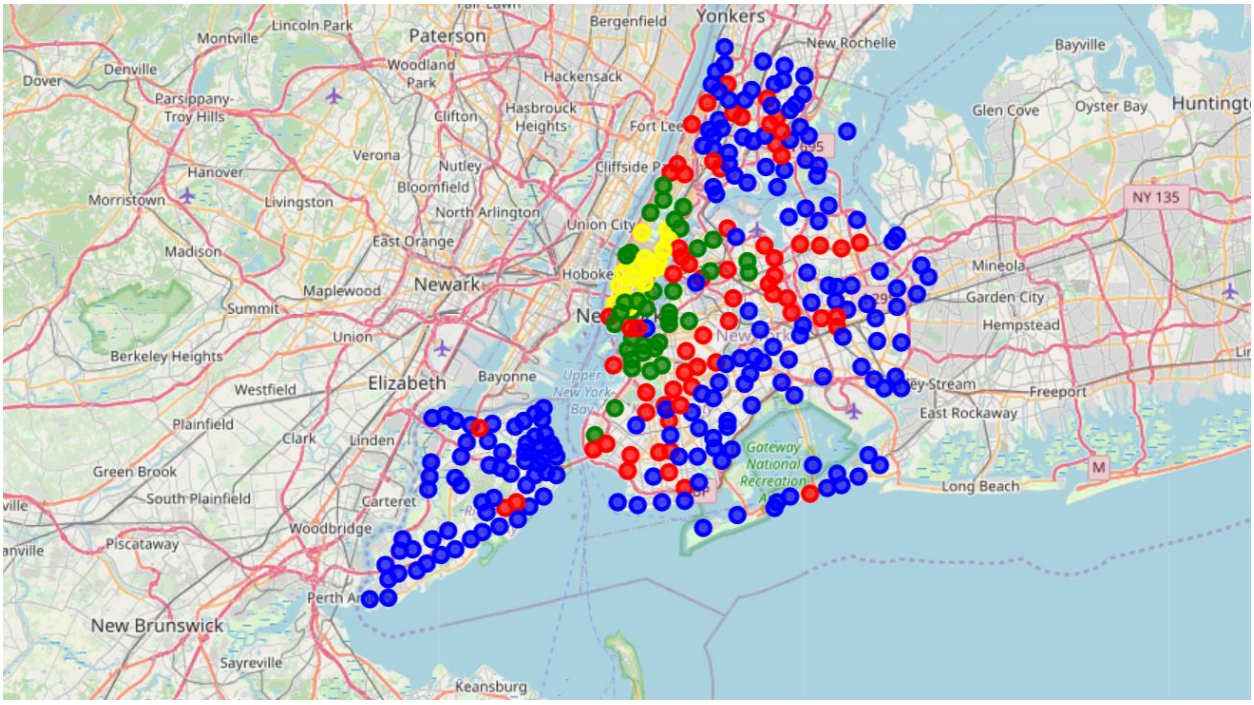
“most likely to have expensive places”

Latitude	Longitude	Borough	Neighborhood	price1	price2	price3	price4
40.894705	-73.847201	Bronx	Wakefield	20	6	1	0

Results:

The 4 clusters are from most expensive to most cheap

Yellow -> Green -> Blue -> Red



As we notice above the most expensive neighborhoods are in Manhattan.

Discussion:

Below there is an image of houses prices per square foot, we notice that there is an obvious relationship between houses prices and pizza prices in the same neighborhood

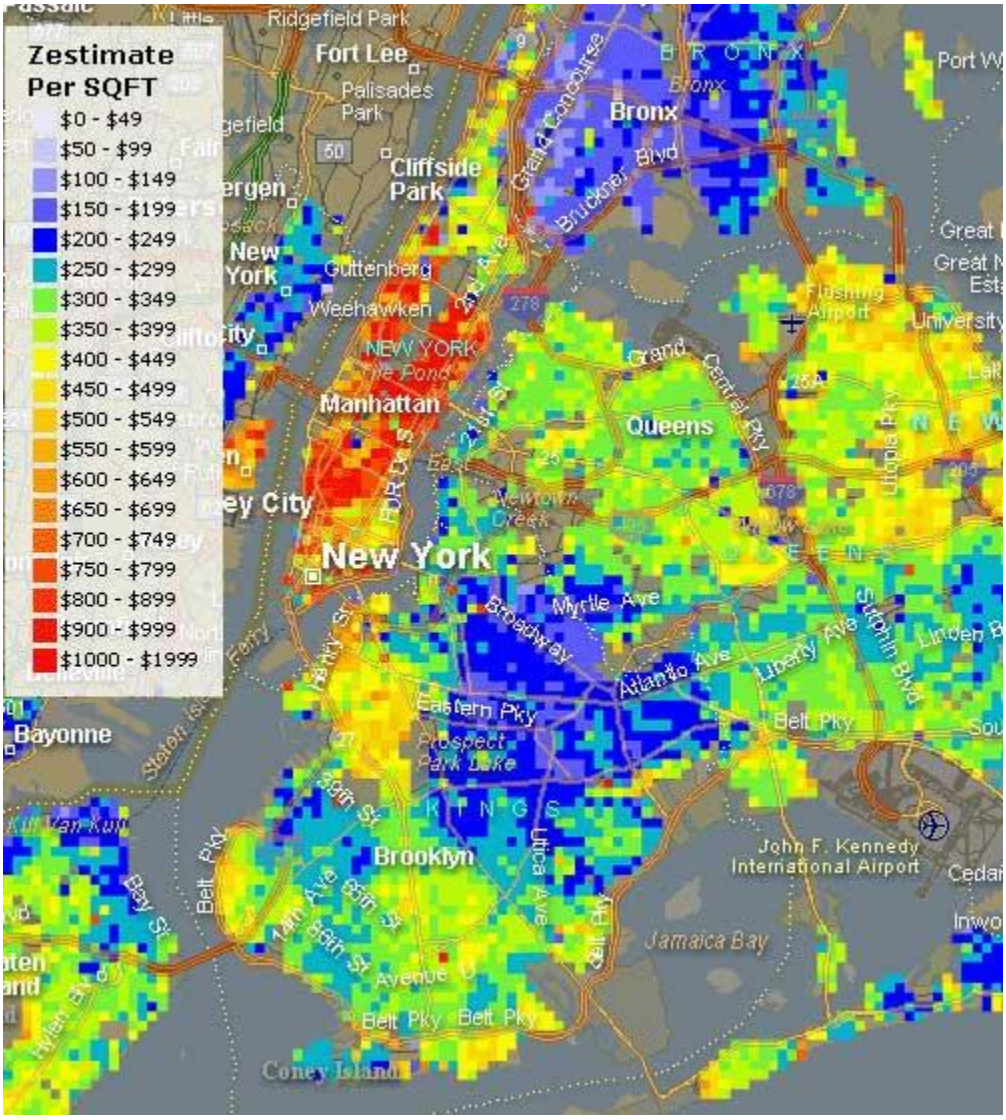
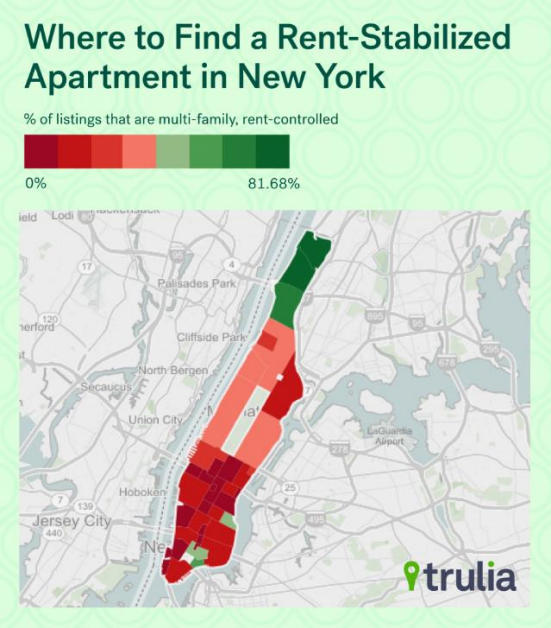
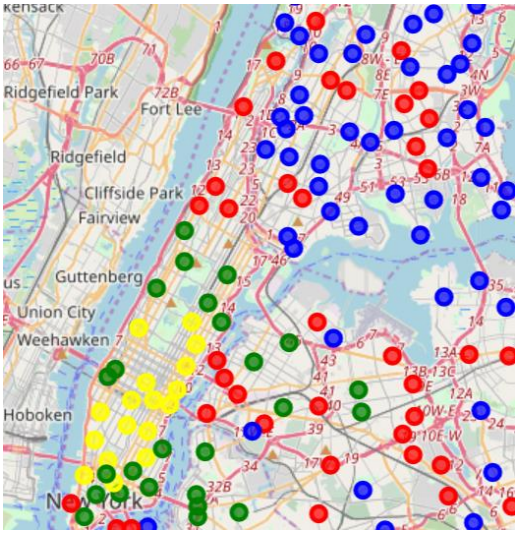


Image source: http://mapscroll.blogspot.com/2009/02/real-estate-prices-in-nyc.html

Even in the same borough we notice the effect of the houses prices on pizza prices





Notice that the north west of Manhattan is the most expensive in houses prices and the same in pizza prices.

The left image source: https://www.trulia.com/research/rent-control-sf-nyc/

Conclusion:

As we saw above if you are paying high rent you are most likely to pay more for your pizza so the pizza price most likely will fit your rent, for example if you live in low rent neighborhood it's most likely to pay less for your pizza.

Another conclusion.. Manhattan is the most expensive Borough to buy pizza from in NY City.