

# CAPSTONE PROJECT REPORT [WEEK 5]

## THE BATTLE OF NEIGHBORHOODS

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### OPENING A NEW RESTAURANT

#### INTRODUCTION

Our company wants to open a new restaurant in San Francisco.



The interest is to open one at a premium location within the city, that would bring good revenue for the new business. The decision is to rent the property instead of buying it.

#### BUSINESS PROBLEM

The ideal location as discussed by the director should be near shopping malls and public transport facilities. Which location would be the best to open the new restaurant in San Francisco?

## TARGET AUDIENCE

Our company Executives and Stakeholders.

## DATA DESCRIPTION

A - Foursquare API: Use of foursquare is focused to fetch nearest venue locations to premium Restaurants and public areas, so that we can use them to form a cluster. Foursquare API leverages the power of finding nearest venues in a radius and also corresponding coordinates, venue location and names. <https://developer.foursquare.com>

B - Considering that our Company is interested in renting an existing location we will need a Rent dataset for San Francisco:  
<https://web.archive.org/web/20180822060556/https://www.rentcafe.com/average-rent-market-trends/us/ca/san-francisco/>,  
<https://www.zillow.com/research/data/>

	Neighborhood	City	State	2018-07
0	Hayes Valley	San Francisco	CA	3030
1	Van Ness - Civic Center	San Francisco	CA	2977
2	Tenderloin	San Francisco	CA	2977
3	Downtown	San Francisco	CA	3040
4	Western Addition	San Francisco	CA	2989
5	Marina	San Francisco	CA	2948
6	Russian Hill	San Francisco	CA	2954
7	Lower Pacific Heights	San Francisco	CA	2963
8	Nob Hill	San Francisco	CA	3050
9	Pacific Heights	San Francisco	CA	2973
10	Noe Valley	San Francisco	CA	2818
11	Stonestown	San Francisco	CA	2640
12	Merced Heights	San Francisco	CA	2640
13	Lakeside	San Francisco	CA	2640
14	North of Panhandle	San Francisco	CA	3048
15	Alamo Square	San Francisco	CA	3048
16	Telegraph Hill	San Francisco	CA	3055
17	North Beach	San Francisco	CA	3055
18	Anza Vista	San Francisco	CA	3099
19	Glen Park	San Francisco	CA	2967
20	Forest Knolls	San Francisco	CA	3005

Using this data will allow exploration & examination of San Francisco's potential locations. The foursquare data will enable us to properly group existing Restaurants according to location popularity. The Rent data will enable us to then compare the rent cost by location. San Francisco's locations of interest will then allow us to cluster & quantitatively understand the ideal locations most common to potential customers for our New restaurant.

## METHODOLOGY

The formula for the solution:

$$\text{finalScore} = (\text{rentScore})0.6 + (\text{ratingScore})0.4$$

Closer the finalScore value to 1, better choice of neighborhood for the client to decide. I have given more weightage to rent than rating. Let's see what is rentScore and ratingScore means. rentScore can be calculated by  $(\text{maxrentofneighborhood} - \text{currentrentofneighborhood}) / (\text{maxrentofneighborhood} - \text{minrentofneighborhood})$ . rentScore value for each neighborhood can be obtained from above rent dataset. ratingScore can be calculated by  $(\text{maxgoodrest} - \text{currentrestratingofN}) / (\text{maxgoodrest} - \text{mingoodrest})$ .

RatingScore can be calculated after retrieving information from foursquare location. To calculate the formula first let's calculate the rentScore. From above rentScore formula we need maximum and minimum rent of neighborhood. Maximum and minimum values can be retrieved using max and min built in functions.

`MAXRENTOFN = MAX(DATAFRAME['RENTCOLUMN'])`

`MINRENTOFN = MIN(DATAFRAME['RENTCOLUMN'])`

I HAVE UPLOADED MY RESULTS ON GITHUB TO SHOW EXAMPLES IN MY REPORT, BELOW I HAVE SHOWN FEW RESULTS OF NEIGHBORHOOD AND RENT SCORE.

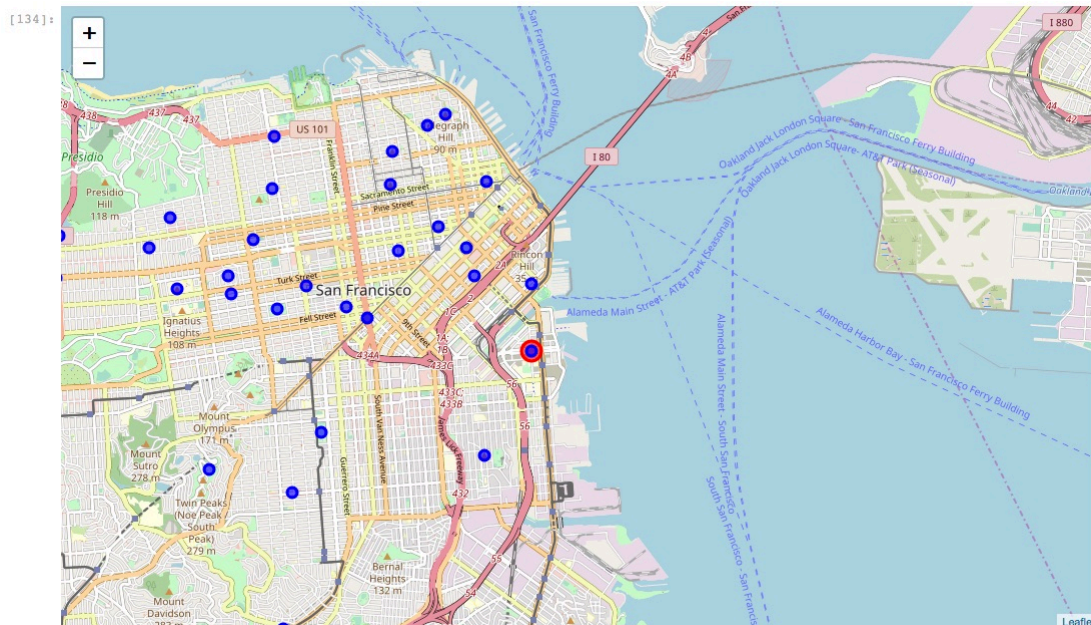
	Neighborhood	2018-07	Latitude	Longitude	RentScore
0	Hayes Valley	3030	37.776685	-122.422936	0.635854
1	Van Ness - Civic Center	2977	37.775190	-122.419266	0.685341
2	Tenderloin	2977	37.784249	-122.413993	0.685341
3	Downtown	3040	37.787514	-122.407159	0.626517
4	Western Addition	2989	37.779559	-122.429810	0.674136
5	Marina	2948	37.799793	-122.435205	0.712418
6	Russian Hill	2954	37.797707	-122.414971	0.706816
7	Lower Pacific Heights	2963	37.785767	-122.438904	0.698413
8	Nob Hill	3050	37.793262	-122.415249	0.617180
9	Pacific Heights	2973	37.792717	-122.435644	0.689076
10	Noe Valley	2818	37.751591	-122.432081	0.833800

## LOADING THE DATA & EXPLORING THE DATA

I went on to calculate the second part of the formula i.e ratingScore, In our project we need only relevant restaurant data, so let's use category ID in search endpoint url. Using Foursquare Credentials and added the final rating score on to my data frame.

	Neighborhood	2018-07	Latitude	Longitude	RentScore	GoodRatingRestaurant	RatingScore	FinalScore
0	Hayes Valley	3030	37.776685	-122.422936	0.635854	2	0.750	0.681513
1	Van Ness - Civic Center	2977	37.775190	-122.419266	0.685341	3	0.625	0.661204
2	Tenderloin	2977	37.784249	-122.413993	0.685341	8	0.000	0.411204
3	Downtown	3040	37.787514	-122.407159	0.626517	6	0.250	0.475910
4	Western Addition	2989	37.779559	-122.429810	0.674136	0	1.000	0.804482
5	Marina	2948	37.799793	-122.435205	0.712418	0	1.000	0.827450
6	Russian Hill	2954	37.797707	-122.414971	0.706816	1	0.875	0.774090
7	Lower Pacific Heights	2963	37.785767	-122.438904	0.698413	2	0.750	0.719048
8	Nob Hill	3050	37.793262	-122.415249	0.617180	1	0.875	0.720308
9	Pacific Heights	2973	37.792717	-122.435644	0.689076	0	1.000	0.813445
10	Noe Valley	2818	37.751591	-122.432081	0.833800	1	0.875	0.850280
11	Stonestown	2640	37.727446	-122.474895	1.000000	0	1.000	1.000000
12	Merced Heights	2640	37.717507	-122.470281	1.000000	0	1.000	1.000000
13	Lakeside	2640	37.731967	-122.474257	1.000000	0	1.000	1.000000

## RESULTS, RECOMMENDATIONS AND CONCLUSION



Folium and choropleth Map of the Best Location for the New Restaurant.



Below are the list of suitable neighborhoods with affordable rent in San Francisco for opening a New Restaurant.

	Neighborhood	2018-07	Latitude	Longitude	RentScore	GoodRatingRestaurant	RatingScore	FinalScore
11	Stonestown	2640	37.727446	-122.474895	1.000000	0	1.000	1.000000
12	Merced Heights	2640	37.717507	-122.470281	1.000000	0	1.000	1.000000
13	Lakeside	2640	37.731967	-122.474257	1.000000	0	1.000	1.000000
10	Noe Valley	2818	37.751591	-122.432081	0.833800	1	0.875	0.850280
5	Marina	2948	37.799793	-122.435205	0.712418	0	1.000	0.827450
19	Glen Park	2967	37.733108	-122.433784	0.694678	0	1.000	0.816807
9	Pacific Heights	2973	37.792717	-122.435644	0.689076	0	1.000	0.813445
4	Western Addition	2989	37.779559	-122.429810	0.674136	0	1.000	0.804482

## CONCLUSION

The Ideal place to rent for the New restaurant is the arear of Mission Rock and UCSF Mission Bay San Francisco with a Minimum rent of Max rent value of 3,711USD and Min rent value of 2,640USD.

The best features of this location are as follows: Near a big parking lot Oracle Parking, public transport and hangout spots like parks and Boom & Bust Course.

# THANK YOU!