

Capstone Project - The Battle of Neighbourhoods

Finding best place for opening new Restaurant

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1. Introduction/Business Problem

In this project we are trying to solve the Business problem for owner who wish to open new branch in foreign country and he has no much idea which city he should prefer then other whenever contactor is offering him two or more choice.

Mr. Rohan is running successfully XYZ Cuisine in Asian countries, now he wants to open branch of its Indian cuisine in North America continent, but at present he may able to open only one branch. He has two option to open branch either in Toronto or New York. The problem is, "which city should he select for running successful business"

There are few criteria he might he will prefer the location:-

1. What is the total population in city
2. No of Indian subcontinent immigrants in that location
3. How many Indian restaurants are present in that area
4. No of tips for any venue shows Indian cuisine demand in that area.

2. Data acquisition and cleaning

To solve this, dataset is required, demographic data of Toronto and New York. Based on demographic data we can identify the migrants community from Indian subcontinent in both the city. Based on this we can identify the city which suitable for client.

Foursquare data is required to find of venues and famous hotel/place in the city and the place where restaurants can be opened.

Example : we want to search a place in Toronto we can use following query

https://api.foursquare.com/v2/venues/search?client_id=*****&client_secret=****&ll=40.73,-70.01&query=indianrestaurant

Then we need to find number of Indian restaurants near famous venue.

https://api.foursquare.com/v2/venues/trending?client_id=*****&client_secret=****&v=201705&ll=40.73,-74.01

https://api.foursquare.com/v2/venues/search?client_id=*****&client_secret=****&ll=40.73,-70.01&query=indianrestaurant

What is the rating given to these restaurants based tips. This will give us the idea whether it is suitable to open Indian restaurants.

https://api.foursquare.com/v2/venues/uniqueID/tips?client_id=***&client_secret=***&v=201705

To clean data the following steps are used

1. Removing NA/ NULL value rows/columns
2. Removing duplicate columns
3. Renaming column

city	country	crossStreet	distance	formattedAddress	labeledLatLngs	lat	lng	neighborhood	postalCode	state	id
New York	United States	89th & 90th St	1318	[1724 2nd Ave (89th & 90th St), New York, NY 1...	[{"label": "display", "lng": -73.9500878568410...	40.780206	-73.950088	NaN	10128	NY	56ed855a498ef3bb022352c3
New York	United States	between W 56th St and W 57th St	2423	[940 8th Ave (between W 56th St and W 57th St)...	[{"label": "display", "lng": -73.9834302510149...	40.765834	-73.983430	Theater District	10019	NY	54f9f0e6498e4e163ca8937a
New York	United States	btwn Lexington & 3rd Ave.	2649	[157 E 55th St (btwn Lexington & 3rd Ave.), Ne...	[{"label": "display", "lng": -73.9688984193861...	40.759122	-73.968898	NaN	10022	NY	4bbf743cba9776b09428ffc8
New York	United States	Park avenue	2658	[53rd street (Park avenue), New York, NY 10022...	[{"label": "display", "lng": -73.9722560833372...	40.759469	-73.972256	NaN	10022	NY	4c6ec437c52437042cf42beb
Long Island City	United States	NaN	4262	[27-18 Queens Plz S, Long Island City, NY 1110...	[{"label": "display", "lng": -73.9392605699454...	40.749976	-73.939261	NaN	11101	NY	50a287a7e4b0033f830f06db

3. Experiment and results

We determined the statistics of data like total no of restaurant with limit in this case 30nos, mean distance it of all restaurants is 1.9 km approx. std div 1.2 km means there quite distance between two Indian restaurants. And 22 out of 30 restaurants lies near to central park Manhattan, New York

distance		
count	30.000000	3
mean	1938.800000	4
std	1238.753445	
min	828.000000	4
25%	1232.500000	4
50%	1389.000000	4
75%	2142.250000	4
max	5653.000000	4



The above figure gives us the distribution of restaurants near Central park Manhattan, NY. We also extract Foursquare data like the number of venues near Central Park, which gives the venue ID. This venue ID is useful to get more details such as ratings, offers, tips, and contact information, etc.

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New York	United States	89th & 90th St	1318	[1724 2nd Ave (89th & 90th St), New York, NY 1...	[{"label": "display", "lng": -73.9500878568410...	40.780206	-73.950088	NaN	10128	NY	56ed855a498ef3bb022352c3
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Long Island City	United States	NaN	4262	[27-18 Queens Plz S, Long Island City, NY 1110...	[{"label": "display", "lng": -73.9392605699454...	40.749976	-73.939261	NaN	11101	NY	50a287a7e4b0033f830f06db

4. Conclusion

The purpose of this project was to identify an area for opening a new Indian restaurant closer to the center in order to search for an optimal location. By calculating the restaurant density distribution from Foursquare.com data, we have first identified general boroughs. The final decision on the optimal restaurant location will be made by stakeholders based on specific characteristics of neighborhoods and locations in every recommended zone.

So far the recommendation is given based population density, per captia income, restaurant density and community in that area. In future selection may based on air quality , road and other environment factors.