# Capstone Project - The Battle of Neighborhoods

## A .Introduction:

### A.1. Description & Discussion of the Background

An entrepreneur wants to start a new Multi Cuisine Indian restaurant in **CHICAGO.** Since he believes that Chicago is one of the most densely populated Indian immigrant states in US. So He approaches a DataScientist for a suggestion where to start his business. (source from wikipedia)
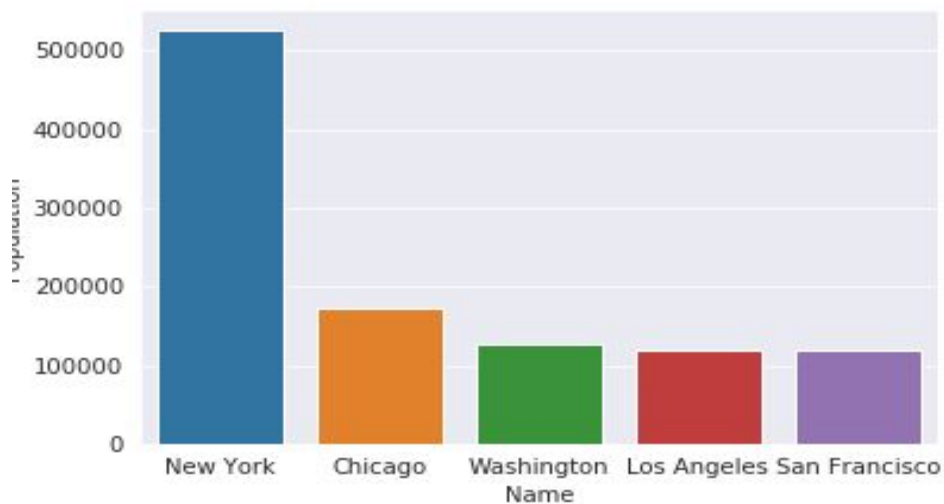


Since being a Data Scientist we need to solve his problem and recommend the best neighborhood of chicago to start his business.

### A.2. Problem :

1. Finding all the Neighborhoods of Chicago.
2. Finding all the Neighborhoods with INDIAN Restaurants.
3. Finding all the Neighborhood with-out single INDIAN Restaurants.
4. Finding the best place and most visited INDIAN Restaurant.
5. Suggest best Neighborhood for starting business.

## B. Data acquisition and cleaning:

Chicago is one of the largest metropolises in the USA, it has various Neighborhoods and various kinds of restaurants within its neighborhood, but in our scenario we only need INDIAN restaurants, so we take help of FourSquare API to accomplish our task.

For this project we need following data :

- ❏ First we need all the neighborhoods of Chicago along with their latitude and longitude coordinates.
  - ➔ **Data Source** : https://en.wikipedia.org/wiki/List_of_neighborhoods_in_Chicago
  - ➔ `Description:` Wikipedia has a list of Neighborhood of Chicago, we scrap it using python libraries and get its location coordinates using geopy.geocoder library in python.

- ❏ Indian restaurants in each Neighborhood of CHICAGO
  - ➔ **Data Source** : **FourSquare API**
  - ➔ `Description:` By using this API we will get all the venues in each neighborhood. We can filter this venues to grab only INDIAN restaurants

## C. Methodology :

1. As every data science project has different phases involved in its life cycle. This project also has different phases like
   - ➔ Business problem
   - ➔ Approach followed
   - ➔ Requirements Gathering (Data collection)
   - ➔ Modeling and evaluation

**C.1: Business Problem**

This is already stated in the Introduction part (refer it)

**C.2 : Approach Followed**

We consider some metrics to solve this problem

1. Number of INDIAN restaurants in neighborhood
2. Distance of neighborhood from the center of the city
3. Is there any tourist places to visit

The optimal place to start business is a location where there are **less** INDIAN restaurants, **Minimum distance** from the center of city and there are some popular **tourist places** to visit.

**C.3 : Requirement gathering (Data collection):**

As mentioned in the Data acquisition section, we gather Data from wikipedia and Foursquare API.

➔ Data from wikipedia that has all Neighborhoods of Chicago

| | Neighborhood | Community area |
|---|---|---|
| 0 | Albany Park | Albany Park |
| 1 | Altgeld Gardens | Riverdale |
| 2 | Andersonville | Edgewater |
| 3 | Archer Heights | Archer Heights |
| 4 | Armour Square | Armour Square |
| ... | ... | ... |
| 241 | Wildwood | Forest Glen |
| 242 | Woodlawn | Woodlawn |
| 243 | Wrightwood | Ashburn |
| 244 | Wrightwood Neighbors | Lincoln Park |
| 245 | Wrigleyville | Lake View |

246 rows × 2 columns

➔ Assigning each Neighborhood its corresponding latitude using Geopy Library in python

| | Name | Latitude | Longitude |
|---|---|---|---|
| 0 | Albany Park | 41.971937 | -87.716174 |
| 1 | Altgeld Gardens | 41.654864 | -87.600446 |
| 2 | Andersonville | 41.977139 | -87.669273 |
| 3 | Archer Heights | 41.811422 | -87.726165 |
| 4 | Armour Square | 41.840033 | -87.633107 |
| ... | ... | ... | ... |
| 226 | Wicker Park | 41.907802 | -87.678155 |
| 227 | Wildwood | 42.004691 | -87.775924 |
| 228 | Woodlawn | 41.779479 | -87.599493 |
| 229 | Wrightwood | 41.748932 | -87.703575 |
| 230 | Wrigleyville | 41.947022 | -87.656477 |

231 rows × 3 columns

We use python library **Folium** to visualize these Neighborhoods.
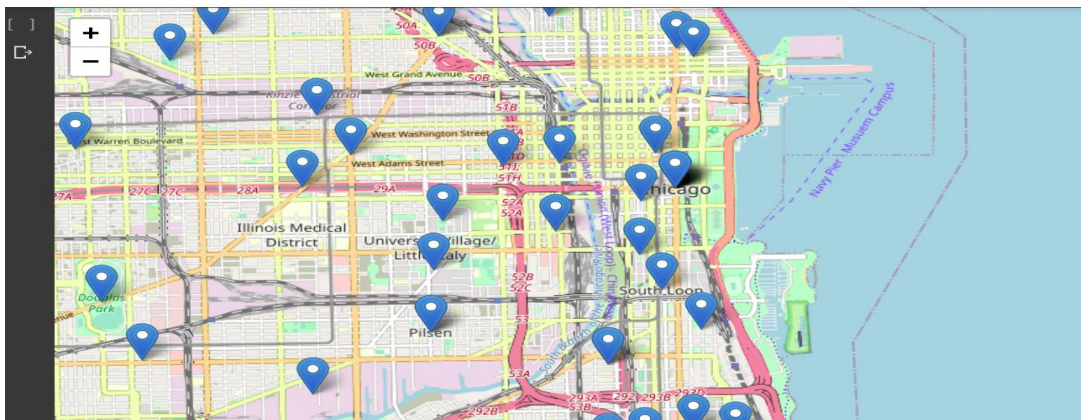
We use FourSquare to get all the location where there are INDIAN restaurants

| | Neighborhood | Id | Name_of_resturant |
|---|---|---|---|
| 0 | Armour Square | 57205dd2498e101ee1162dbf | Oberoi's Indian Food |
| 1 | Avondale | 5d2a84fc7cfbfe00235364df | Superkhana International |
| 2 | Avondale Gardens | 5d2a84fc7cfbfe00235364df | Superkhana International |
| 3 | Belmont Central | 562987d2498e027ba6c80810 | Khyber Pass |
| 4 | Belmont Gardens | 562987d2498e027ba6c80810 | Khyber Pass |
| 5 | Belmont Terrace | 562987d2498e027ba6c80810 | Khyber Pass |
| 6 | Bowmanville | 4b7ca417f964a5200b9f2fe3 | Paprika |
| 7 | Bronzeville | 57205dd2498e101ee1162dbf | Oberoi's Indian Food |
| 8 | East Hyde Park | 4a592bdaf964a520dfb81fe3 | Rajun Cajun |
| 9 | Edgewater | 4b3c09dbf964a520cf8025e3 | The Little India Restaurant |
| 10 | Edgewater Beach | 4b3c09dbf964a520cf8025e3 | The Little India Restaurant |
| 11 | Edgewater Glen | 583f96e34c5312682f04d38b | Mango Pickle |
| 12 | Forest Glen | 4fa83a75e4b0e4e84cb26830 | Himshikhar Restaurant |
| 13 | Graceland West | 52f80e32498e677d6a1b6424 | Curry Point |
| 14 | Heart of Chicago | 4fc96051e4b0e1bd1a22150f | Rangoli |
| 15 | Heart of Chicago | 4c783985dbaa76b0fa28144b | Naveen's Cuisine |
| 16 | Hyde Park | 4a592bdaf964a520dfb81fe3 | Rajun Cajun |

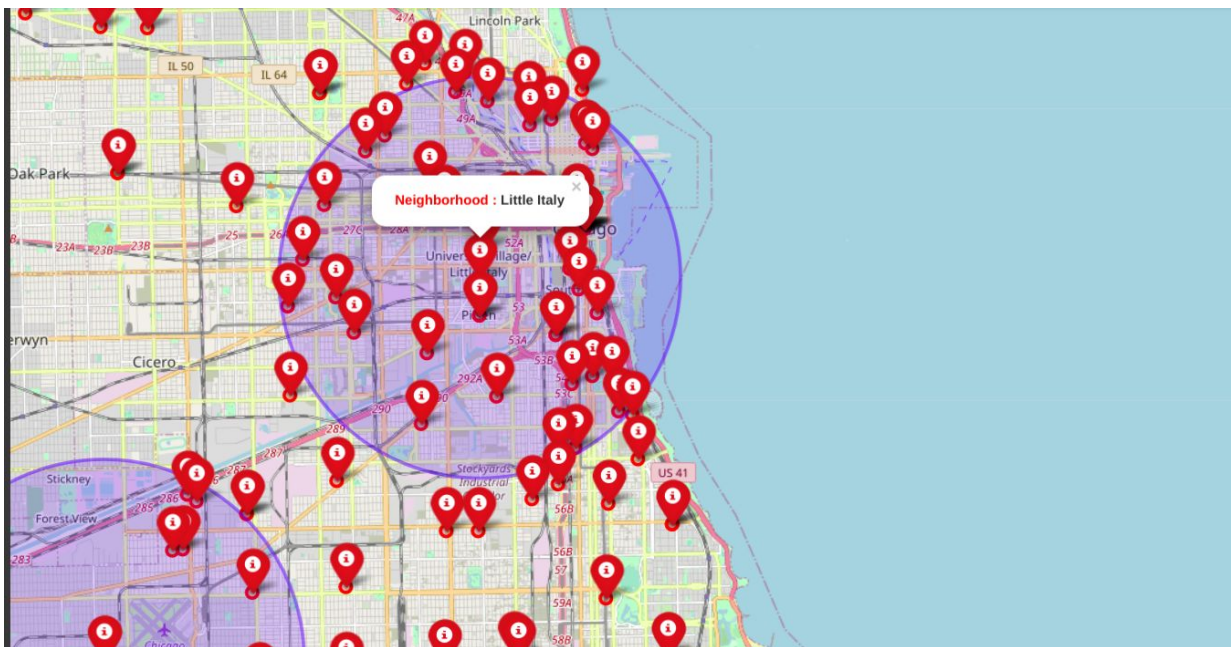Visualization of the INDIAN Restaurants in CHICAGO
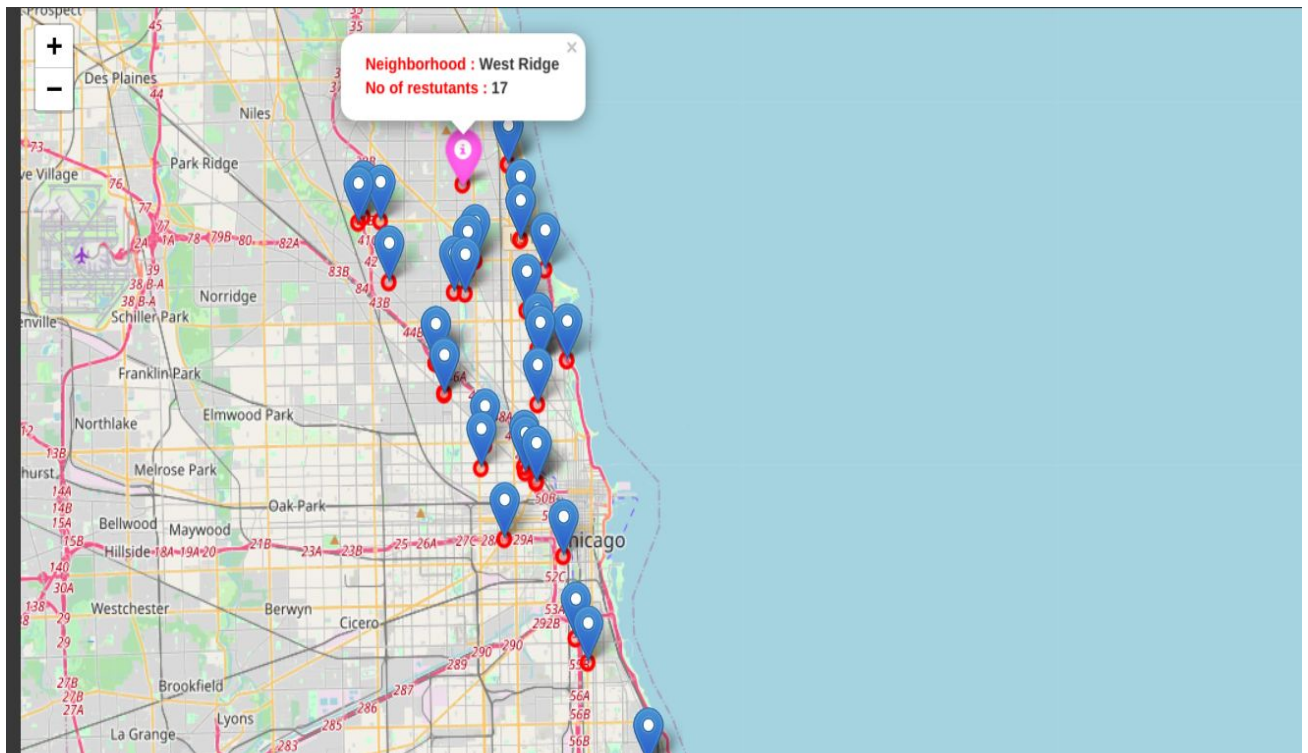


The pink marker show the Location where there are larger INDIAN Restaurants

Visualization of location where there is no INDIAN Restaurants
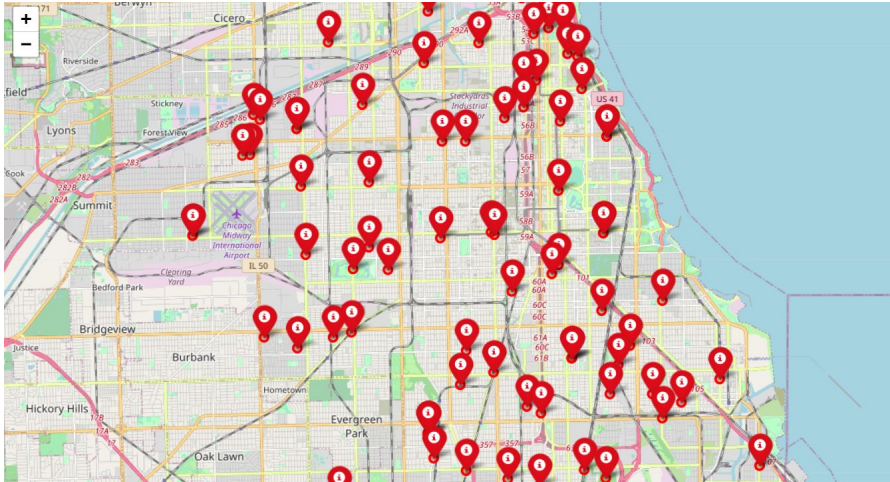


So we find the best location among them to suggest to our client



The circle Marker shows the neighborhoods that have tourist places, but there are no INDIAN restaurants over there.
So we suggest these locations to the client so he can start his business.

## D. Conclusion :

1. Best place in CHICAGO to find INDIAN restaurant : **West Ridge** (it has 17 INDIAN restaurants)
2. Best restaurant in West Ridge to have dinner : **TAHOORA** (it has got 7.8 ratings and 49 likes)
3. Best place for entrepreneur to start business : **Little Italy,Lilydale,Clearing**