

# **FINAL REPORT**

## **APPLIED DATA SCIENCE CAPSTONE PROJECT: The Battle of Neighborhoods.**

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# Introduction:

- Oklahoma City is the capital of the U.S. state of Oklahoma. It's known for its cowboy culture and capitol complex, surrounded by working oil wells. The reflecting pool and empty glass and bronze chairs of the Oklahoma City National Memorial recall the victims of the 1995 bombing of the Alfred P. Murrah Federal Building. The Survivor Tree, an American elm nearly destroyed in the attack, is also part of the memorial. Its residents are known as Oklahomans (or colloquially, "[Okies](#)"), and its capital and largest city is [Oklahoma City](#). It happens to be the 28<sup>th</sup> most populous state in the USA. Oklahoma happens to be quite a big state with close to 78 Counties and 597 incorporated municipalities.
- In Oklahoma, cities are all those incorporated communities which are 1000 or more in population and are incorporated as cities. Towns are limited to town board type of municipal government.
- Oklahoma known as the cowboy state of USA has a rich culture and heritage. Its residents are known as Oklahomans (or colloquially, "[Okies](#)"), and its capital and largest city is [Oklahoma City](#). It happens to be the 28<sup>th</sup> most populous state in the USA. Oklahoma is fast growing state in terms of business and Industry.
- This gives rise to a large amount of the state population comprising of immigrants. Six percent of Oklahoma residents are immigrants, while another 6 percent of residents are native-born U.S. citizens with at least one immigrant parent. One in 12 Oklahoma workers is an immigrant, making up a vital part of the state's labor force. In 2018, 236,882 immigrants (foreign-born individuals) comprised 6 percent of the population. The top countries of origin for immigrants were Mexico (45 percent of immigrants), Vietnam (5 percent), India (5 percent), Germany (3 percent), and Guatemala (3 percent).
- This completely evidences the fact that Oklahoma has a quite a diverse culture living amongst it. Along the diverse culture comes in diverse people and their diverse food items. There are close to 7,067 eating and drinking places in Oklahoma as of 2018. Restaurants are a driving force in Oklahoma's economy. They provide jobs and build careers for thousands of people, and play a vital role in local communities throughout the state. Each of these restaurants belong to a different kind of cuisine such as Chinese, Mexican, Indian and French etc.

**So through this project we will try to help the immigrants who left their home, their culture and find them their native cuisine.**

**We are sticking to Indian and Asian Cuisine for this report. But this code can be used for finding any type of cuisine in Oklahoma.**

## **PROBLEMS:**

1. WHICH IS THE COUNTIES WITH THE MOST NUMBER OF CITIES/AREA CODES IN OKLAHOMA.
2. WHICH IS THE BEST LOCATION IN OKLAHOMA TO FIND INDIAN CUISINE.
3. THROUGH THIS CODE YOU CAN ALSO FIND ANY TYPE OF EATING OUTLET IN OKLAHOMA CITY OF YOUR CHOICE.
4. WHICH IS THE PLACE WHERE IT IS DIFFICULT TO FIND AN INDIAN RESTAURANT.
5. WHICH IS THE BEST PLACE TO STAY IF YOU PREFER INDIAN CUISINE.

## **DATA SECTION:**

1. OKLAHOMA STATE DATASET WHICH CONTAINS THE LIST OF THE AREA CODES, COUNTIES AND CITIES.
  - DATA SOURCE: <https://www.zipcodestogo.com/Oklahoma/>
  - DESCRIPTION: THIS DATASET CONTAINS THE INFORMATION ABOUT AREA CODES, COUNTIES AND CITIES. THIS IS A COMPARITIVELY LARGE DATASET CONSISTING OF CLOSE TO 773 DIFFERENT AREA CODES.

2. INDIAN RESTAURANTS OR ANY OTHER CUISINE RESTURANT OF YOUR PREFERENCE IN EACH COUNTY OF OKLAHOMA CITY.

- DATA SOURCE : FOURSQUARE API
- DESCRIPTION: BY USING THIS API WE WILL GET ALL THE VENUES IN EACH NEIGHBOURHOOD. WE CAN FILTER THESE VENUES TO GET ONLY INDIAN RESTAURANTS.

3. OKLAHOMA CITY DATABASE WITH THEIR RESPECTIVE COUNTIES AND ZIP CODES

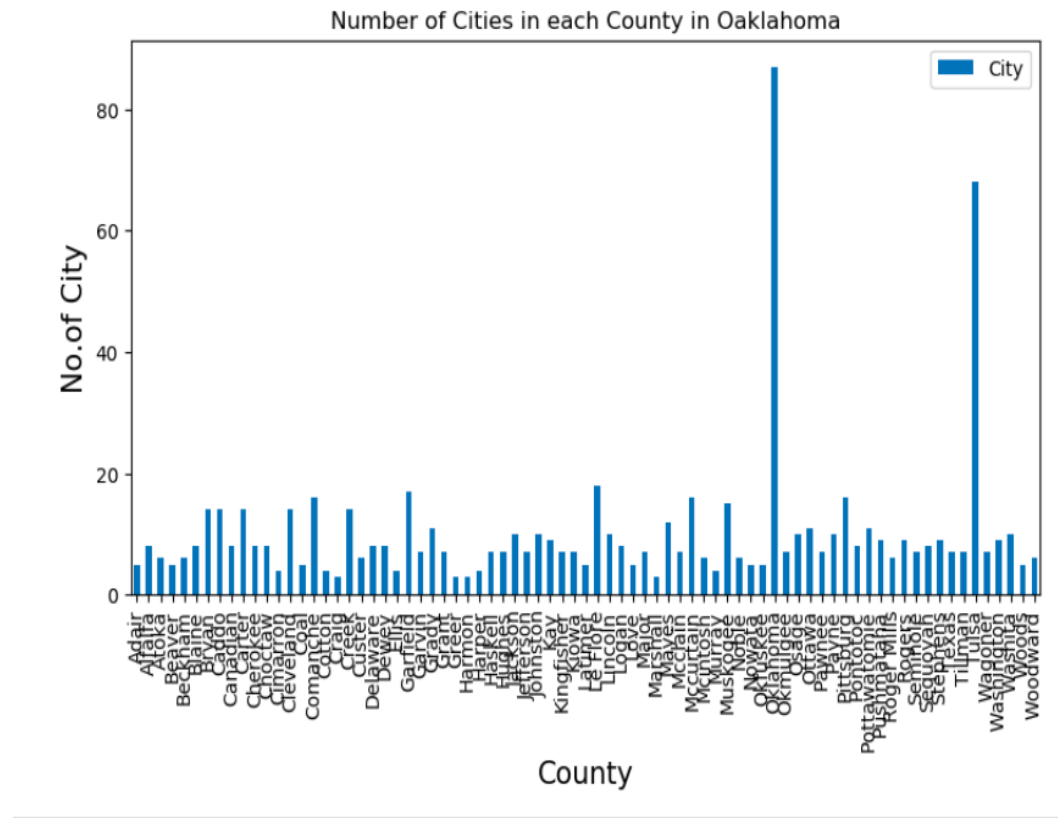
- DATA SOURCE:  
[https://www.ciclt.net/sn/clt/capitolimpact/gw\\_ziplist.aspx?FIPS=40109](https://www.ciclt.net/sn/clt/capitolimpact/gw_ziplist.aspx?FIPS=40109)
- DESCRIPTION: BY USING THIS DATASET WE ARE TRY STEAMLINE OUR SEARCH

## METHODOLOGY:

1. We need to begin by finding a proper dataset for the state of Oklahoma which can be found on <https://www.zipcodestogo.com/Oklahoma/> . Once we have found the database we can extract the data from the url mentioned above using the request command. Alternatively you can also copy the data from the website to a csv file or a Microsoft Excel file and then read the file into and create a database for it.
2. Once the database has been created we will then import the geophy library and add the columns latitudes and longitudes into the database.
3. We will find all venues for each neighbourhood using Foursquare API.
4. We will then filter out all venues with Indian restaurant for further analysis.
5. Next using Foursquare API, we will find the Information about the Indian Restaurants.
6. Based on the above analysis we will be able to also predict which of the areas in the city of Oklahoma do not have any Indian restaurants.

## RESULTS/CONCLUSIONS:

- 1. From the following graph we can predict that Oklahoma City (County) has the highest number of Cities and Area codes in it. (The code for this solution can be found in the other jupyter notebook in the same folder of my github).**



- 2. Oklahoma City is the best place for finding good restaurants. Kha Zana is the best Indian Restaurant in Oklahoma City.**

Out[150]:

	City	Asian Restaurant	Cluster Labels	City Latitude	City Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
10	Oklahoma City	0.003623	2	35.518945	-97.56007	Kha Zana	35.519988	-97.565005	Indian Restaurant

- 3. Through this code based on the cluster data we have we can find any type of cuisines there in Oklahoma City. As shown in the screenshot we can get information on any type of restaurant in Oklahoma.**

```
In [129]: 1 len(to_grouped[to_grouped["Asian Restaurant"] > 0])
```

```
Out[129]: 2
```

```
In [130]: 1 len(to_grouped[to_grouped["Chinese Restaurant"] > 0])
```

```
Out[130]: 1
```

```
In [131]: 1 len(to_grouped[to_grouped["Fast Food Restaurant"] > 0])
```

```
Out[131]: 8
```

```
In [134]: 1 len(to_grouped[to_grouped["Burger Joint"] > 0])
```

```
Out[134]: 4
```

4. Shown below is the screenshot which shows all the areas where you can find an Indian Restaurants. Similarly in the other screenshot it gives a result of the areas where you can find an Asian Restaurant.

```
Out[136]:
```

	City	Indian Restaurant
0	Arcadia	0.000000
1	Bethany	0.000000
2	Choctaw	0.000000
3	Edmond	0.000000
4	Harrah	0.000000
5	Jones	0.000000
6	Luther	0.000000
7	Midwest City	0.000000
8	Nichols Hills	0.000000
9	Nicoma Park	0.000000
10	Oklahoma City	0.003623
11	Spencer	0.000000
12	Warr Acres	0.000000
13	Wheatland	0.000000

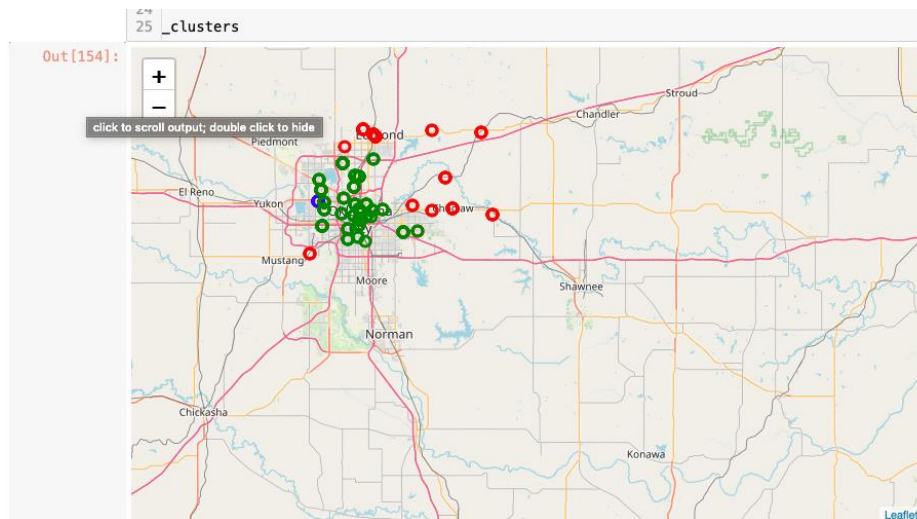
In [139]:

```
1 to_asian
```

Out[139]:

	City	Asian Restaurant
0	Arcadia	0.000000
1	Bethany	0.153846
2	Choctaw	0.000000
3	Edmond	0.000000
4	Harrah	0.000000
5	Jones	0.000000
6	Luther	0.000000
7	Midwest City	0.000000
8	Nichols Hills	0.000000
9	Nicoma Park	0.000000
10	Oklahoma City	0.003623
11	Spencer	0.000000
12	Warr Acres	0.000000
13	Wheatland	0.000000

5. From the above screenshots and the program we have learnt that Oklahoma City(County) would be a preferable place to live if you prefer Indian Cuisine.



## CONCLUSION:

There is always room for improvement and hence the above solution I have provided can also be improved for better results depending upon the data we have.