Opening Cappuccino Coffee Shop in San Francisco neighborhood Using Data Analysis Techniques.

Introduction

- In this project, we will use the Foursquare API to explore neighborhoods in San Francisco, get the most common venue categories in each neighborhood, use the k-means clustering algorithm to find similar neighborhoods, use the Folium library to visualize the neighborhoods in San Francisco

Data

- We analyze the following page

- http://www.healthysf.org/bdi/outcomes/zipmap.htm,

- In order to obtain the data that is in the table of postal codes and to transform the data into a pandas data frame.

Convert Addresses into Latitude and Longitude

- In order to utilize the Foursquare location data, we need to get the latitude and the longitude coordinates of each neighborhood

Explore Neighborhoods in San Francisco
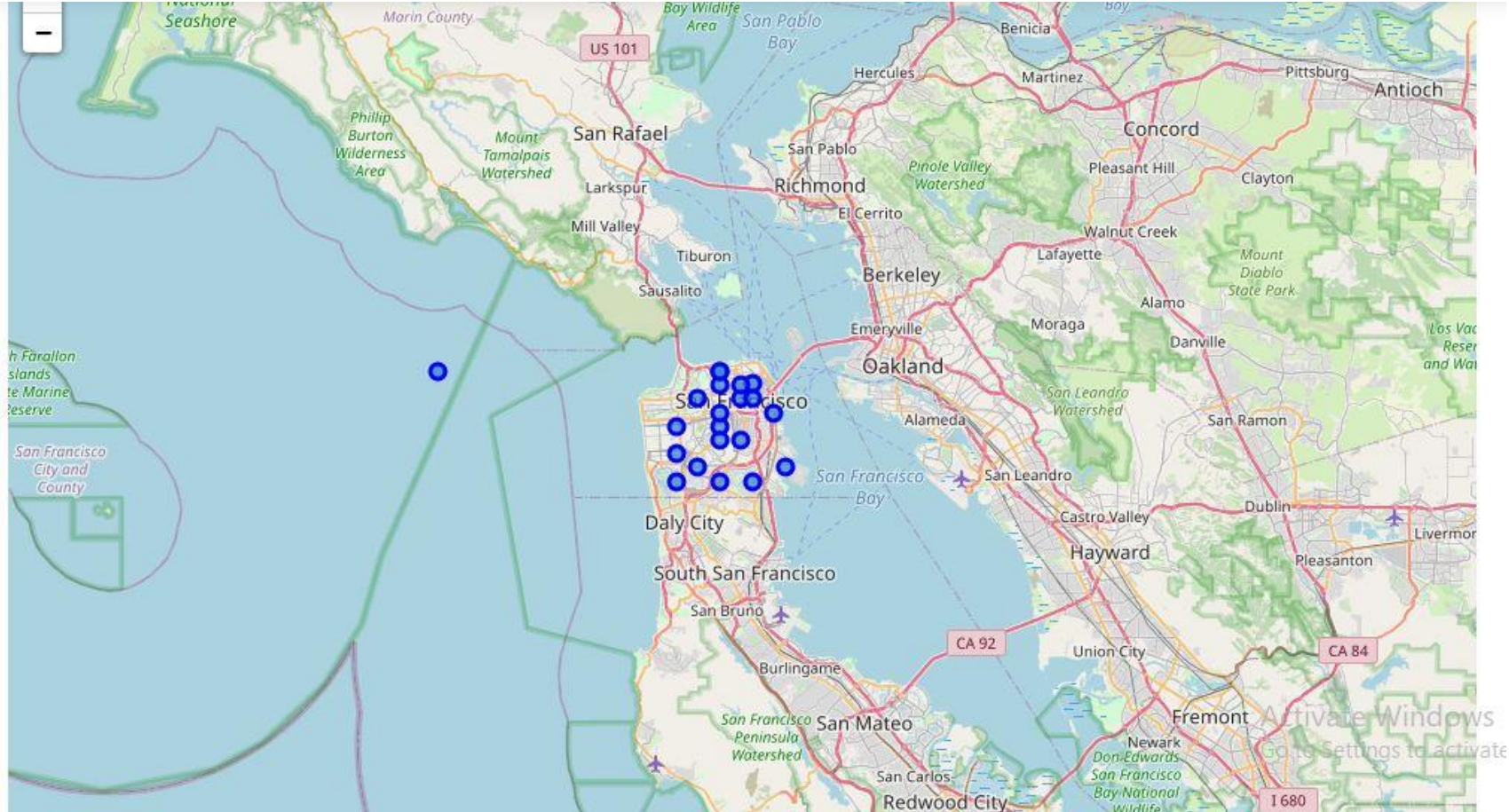
Define Foursquare Credentials and Version

```python
CLIENT_ID = 'PK4E3AX1HWYOAYAJXBCEN5FAIYYBI2YQMJTCM3DJTC0CUD2L' # your Foursquare ID
CLIENT_SECRET = 'GLWH10Z34GDBJB1J5T2UW5J0KSTXQIWBRLCFBD2LIM5LGGCA' # your Foursquare Secret
VERSION = '20180605' # Foursquare API version
LIMIT = 100

print('Your credentails:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)
```

```
Your credentails:
CLIENT_ID: PK4E3AX1HWYOAYAJXBCEN5FAIYYBI2YQMJTCM3DJTC0CUD2L
CLIENT_SECRET:GLWH10Z34GDBJB1J5T2UW5J0KSTXQIWBRLCFBD2LIM5LGGCA
```

Cluster Neighborhoods

k-means is especially useful if you need to quickly discover insights from unlabeled data.
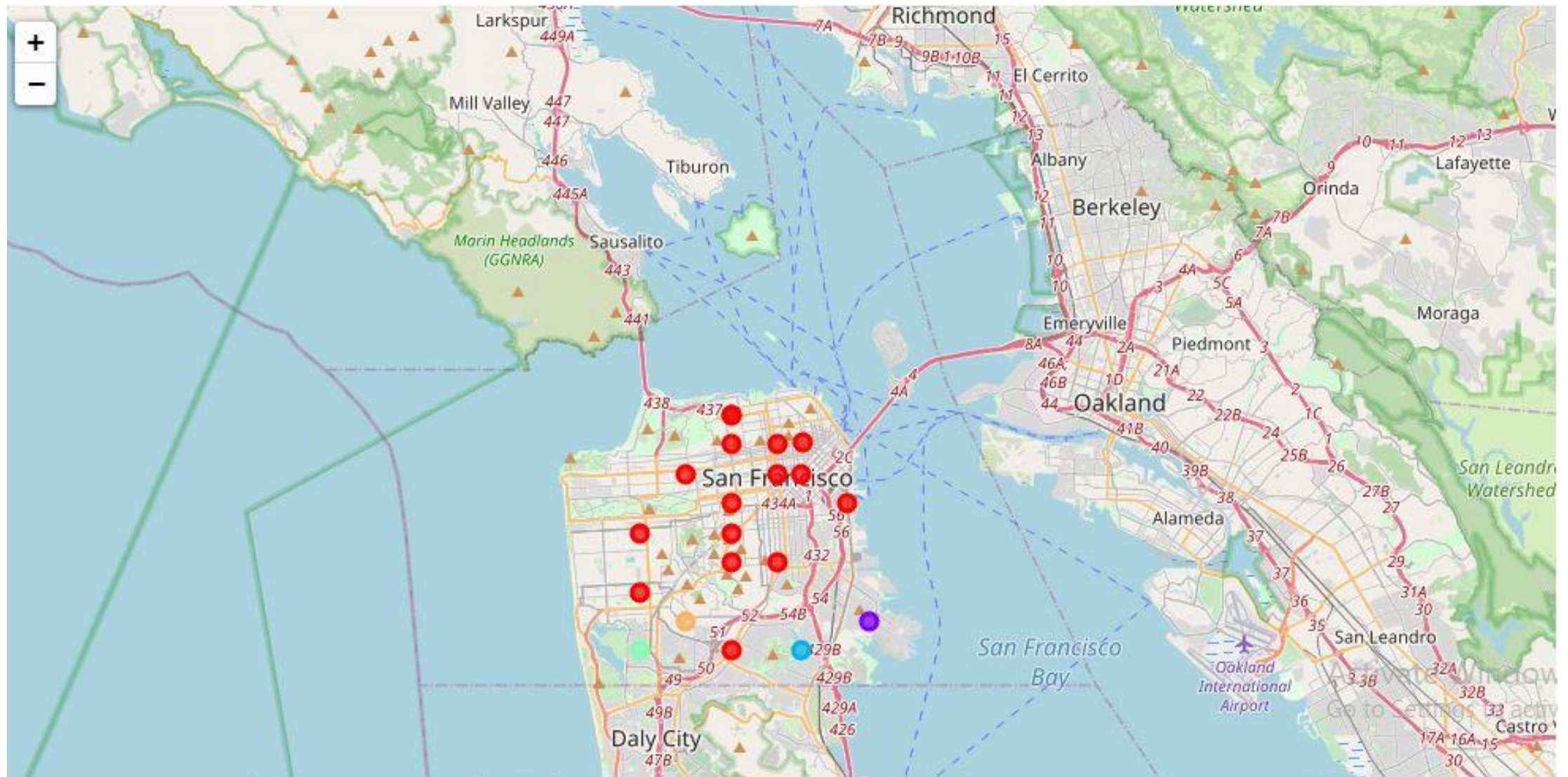Run k-means to cluster the neighborhood into 5 clusters.
k-means will then partition our neighborhoods into 5 groups.
The neighborhoods in each cluster are similar to each other in terms of the features included in the dataset.

	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	Bayview-Hunters Point	Coffee Shop	Motorcycle Shop	Gelato Shop	Yoga Studio	Fried Chicken Joint	French Restaurant	Fountain	Food Truck	Food & Drink Shop	Fondue Restaurant
1	Castro/Noe Valley	Gay Bar	Park	Coffee Shop	Grocery Store	Thai Restaurant	Yoga Studio	Playground	Wine Bar	Pizza Place	Pilates Studio
2	Chinatown	Hotel	Coffee Shop	Boutique	American Restaurant	Sushi Restaurant	Hotel Bar	Cocktail Bar	Electronics Store	Bar	Men's Store
3	Haight-Ashbury	Coffee Shop	Grocery Store	Yoga Studio	Gastropub	Restaurant	Recreation Center	Pizza Place	Pet Store	Park	Mexican Restaurant
4	Hayes Valley/Tenderloin/North of Market	Cocktail Bar	Coffee Shop	Vietnamese Restaurant	Vegetarian / Vegan Restaurant	Hotel	Café	Theater	Sandwich Place	Boutique	French Restaurant

Cluster Neighborhoods

Examine Clusters

• K-mean cluster method was found for clusters. k-means is especially useful if you need to quickly discover insights from unlabeled data. Run k-means to cluster the neighborhood into 5 clusters. k-means will then partition our neighborhoods into 5 groups. The neighborhoods in each cluster are similar to each other in terms of the features included in the dataset. Based on the data analysis, the coffee shop can be open in the second cluster because the data analysis showed that numbers of coffee shops in the area are still small and can reduce the competition. However, it also found that the second cluster has the smallest number of area and have a potential smaller profit if the coffee shop is open in the first cluster.