Capstone-DataScience (/github/RobFaj/Capstone-DataScience/tree/master)
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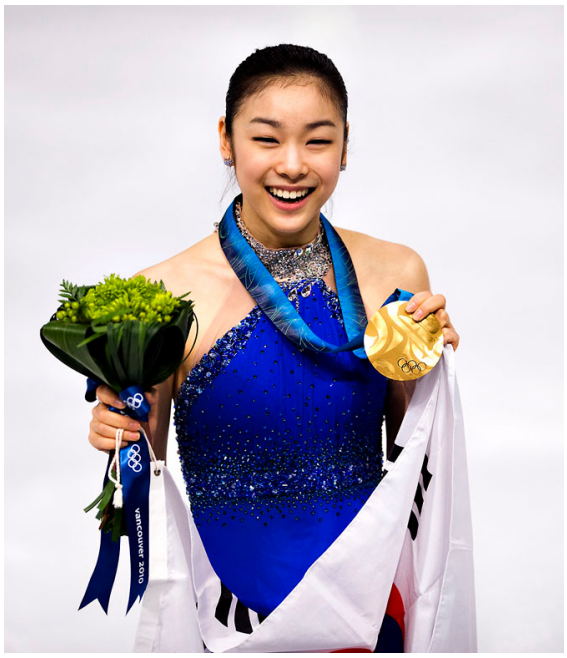
Battling Neighborhoods_template_8.15-Copy1 (1).ipynb (/github/RobFaj/Capstone-DataScience/tree/master/Battling Neighborhoods_template_8.15-Copy1 (1).ipynb)



Battling the Neighborhoods in L.A.: find a place for Korean BBQ & Cafe

The goal of my project is to find a good place in the USA for Korean restaurants and coffee cafes. Champion figure skater Yuna Kim is funding a Korean food start-up restaurant and wants to be in a city suitable for patio weather and LA is a great place. The start-up is nterested in serving Korean BBQ one side of the venue with a division wall where they want have a donut shop that serves gourmet hot/cold teas and coffee. This project is intended to help with location.

I will survey the territory with 500 meters of Koreatown utilizing my Foursquare API connection and python notebooks along. The results will be prepared in the form of tables and interactive Geomap that shows the location of the ideal location and other areas of Coffee Shop saturation, and the neighborhood's most common venue should ideally be a Korean restaurant with few coffee shops.

In [42]:
```
#install conda geopy and folium
#!conda install -c conda-forge geopy --yes # uncomment this line if you haven't completed the Foursquare API
#!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you haven't completed the Foursqua

!pip install folium==0.5.0
#pip install geopy
```

```
Requirement already satisfied: folium==0.5.0 in /opt/conda/envs/Python36/lib/python3.6/site-packages (0
Requirement already satisfied: six in /opt/conda/envs/Python36/lib/python3.6/site-packages (from folium=
Requirement already satisfied: requests in /opt/conda/envs/Python36/lib/python3.6/site-packages (from f
Requirement already satisfied: branca in /opt/conda/envs/Python36/lib/python3.6/site-packages (from fol
Requirement already satisfied: jinja2 in /opt/conda/envs/Python36/lib/python3.6/site-packages (from fol
Requirement already satisfied: idna<2.9,>=2.5 in /opt/conda/envs/Python36/lib/python3.6/site-packages (
Requirement already satisfied: certifi>=2017.4.17 in /opt/conda/envs/Python36/lib/python3.6/site-packag
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in /opt/conda/envs/Python36/lib/python3.6/site-pac
Requirement already satisfied: urllib3<1.25,>=1.21.1 in /opt/conda/envs/Python36/lib/python3.6/site-pac
Requirement already satisfied: MarkupSafe>=0.23 in /opt/conda/envs/Python36/lib/python3.6/site-packages
```

In [43]:
```
!pip install geopy
```

```
Requirement already satisfied: geopy in /opt/conda/envs/Python36/lib/python3.6/site-packages (2.0.0)
Requirement already satisfied: geographiclib<2,>=1.49 in /opt/conda/envs/Python36/lib/python3.6/site-pa
```

In [ ]:
```
import numpy as np # library to handle data in a vectorized manner

import pandas as pd # library for data analsysis
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)

import json # library to handle JSON files

#!conda install -c conda-forge geopy --yes # uncomment this line if you haven't completed the Foursquare API
from geopy.geocoders import Nominatim # convert an address into latitude and longitude values

import requests # library to handle requests
from pandas.io.json import json_normalize # tranform JSON file into a pandas dataframe

# Matplotlib and associated plotting modules
import matplotlib.cm as cm
import matplotlib.colors as colors

# import k-means from clustering stage
from sklearn.cluster import KMeans

#!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you haven't completed the Foursqua
import folium # map rendering library

print('Libraries imported.')
```

In [2]:
```
#!wget -q -O 'LA_data.json' https://services5.arcgis.com/7nsPwEMP38bSkCjy/arcgis/rest/services/LA_Times_Neigh
#print('Data downloaded!')
```

In [3]:
```
#LA_data.head()
```

Understanding and Processing LA Neighborhood Data First

In [4]:
```
import pandas as pd
df_LA=pd.read_csv("https://usc.data.socrata.com/api/views/9utn-waje/rows.csv?accessType=DOWNLOAD&bom=true&for
df_LA.head()
```

Out[4]:

	set	slug	the_geom	kind	external_i	name	display_na	sqmi	type	name_1
0	L.A. County Neighborhoods (Current)	acton	MULTIPOLYGON (((-118.20261747920541 34.5389897...	L.A. County Neighborhood (Current)	acton	Acton	Acton L.A. County Neighborhood (Current)	39.339109	unincorporated-area	NaN
1	L.A. County Neighborhoods (Current)	adams-normandie	MULTIPOLYGON (((-118.30900800000012 34.0374109...	L.A. County Neighborhood (Current)	adams-normandie	Adams-Normandie	Adams-Normandie L.A. County Neighborhood (Curr...	0.805350	segment-of-a-city	NaN
2	L.A. County Neighborhoods (Current)	agoura-hills	MULTIPOLYGON (((-118.76192500000009 34.1682029...	L.A. County Neighborhood (Current)	agoura-hills	Agoura Hills	Agoura Hills L.A. County Neighborhood (Current)	8.146760	standalone-city	NaN
3	L.A. County Neighborhoods (Current)	agua-dulce	MULTIPOLYGON (((-118.2546773959221 34.55830403...	L.A. County Neighborhood (Current)	agua-dulce	Agua Dulce	Agua Dulce L.A. County Neighborhood (Current)	31.462632	unincorporated-area	NaN
4	L.A. County Neighborhoods (Current)	alhambra	MULTIPOLYGON (((-118.12174700000014 34.1050399...	L.A. County Neighborhood (Current)	alhambra	Alhambra	Alhambra L.A. County Neighborhood (Current)	7.623814	standalone-city	NaN

In [5]:
```
df1_LA = df_LA[['set','name','latitude','longitude']]
```

In [6]:
```
df1_LA.head()
```

Out[6]:

	set	name	latitude	longitude
0	L.A. County Neighborhoods (Current)	Acton	-118.169810	34.497355
1	L.A. County Neighborhoods (Current)	Adams-Normandie	-118.300208	34.031461
2	L.A. County Neighborhoods (Current)	Agoura Hills	-118.759885	34.146736
3	L.A. County Neighborhoods (Current)	Agua Dulce	-118.317104	34.504927
4	L.A. County Neighborhoods (Current)	Alhambra	-118.136512	34.085539

In [7]:
```
print('The LA dataframe has {} neighborhoods.'.format(
        len(df1_LA['name'].unique()),
        df1_LA.shape[0]
    )
)
```

```
The LA dataframe has 272 neighborhoods.
```

In [8]:
```
address = 'Los Angeles, CA'

geolocator = Nominatim(user_agent="ny_explorer")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('The geograpical coordinate of Los Angeles are {}, {}.'.format(latitude, longitude))
```

```
The geograpical coordinate of Los Angeles are 34.0536909, -118.2427666.
```

In [9]:
```
LA_data = df1_LA[df1_LA['set'] == 'L.A. County Neighborhoods (Current)'].reset_index(drop=True)
LA_data.head()
```

Out[9]:

	set	name	latitude	longitude
0	L.A. County Neighborhoods (Current)	Acton	-118.169810	34.497355
1	L.A. County Neighborhoods (Current)	Adams-Normandie	-118.300208	34.031461
2	L.A. County Neighborhoods (Current)	Agoura Hills	-118.759885	34.146736
3	L.A. County Neighborhoods (Current)	Agua Dulce	-118.317104	34.504927
4	L.A. County Neighborhoods (Current)	Alhambra	-118.136512	34.085539

In [10]:
```
CLIENT_ID = 'EZNZI2RCAYZGJSRALET004Y44IDJLU3A4SOM44SM3ZVAQ3WC' # your Foursquare ID
CLIENT_SECRET = 'RM5YUKT10M10DOVAXQIMAAA2QOXQPU1ZOQEMF55SVNPNNOTD' # your Foursquare Secret
VERSION = '20180604' # Foursquare API version

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

```
Your credentails:
CLIENT_ID: EZNZI2RCAYZGJSRALET004Y44IDJLU3A4SOM44SM3ZVAQ3WC
CLIENT_SECRET:RM5YUKT10M10DOVAXQIMAAA2QOXQPU1ZOQEMF55SVNPNNOTD
```

In [11]:
```
LA_data.loc[[28], 'name']
```

Out[11]:
```
28    Koreatown
Name: name, dtype: object
```

In [12]:
```
neighborhood_latitude = LA_data.loc[28, 'longitude'] # neighborhood latitude value
neighborhood_longitude = LA_data.loc[28, 'latitude'] # neighborhood longitude value

neighborhood_name = LA_data.loc[28, 'name'] # neighborhood_name

print('Latitude and longitude values of {} are {}, {}.'.format(neighborhood_name,
                                                               neighborhood_latitude,
                                                               neighborhood_longitude))
```

```
Latitude and longitude values of Koreatown are 34.06451049912376, -118.3049585.
```

In [13]:
```
# type your answer here
LIMIT=10000 # number of venues

#define radius
radius = 30000

# create URL
url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radius={}&li
    CLIENT_ID,
    CLIENT_SECRET,
    VERSION,
    neighborhood_latitude,
    neighborhood_longitude,
    radius,
    LIMIT)
url # display URL
```

Out[13]:
```
'https://api.foursquare.com/v2/venues/explore?&client_id=EZNZI2RCAYZGJSRALET004Y44IDJLU3A4SOM44SM3ZVAQ3
```

In [14]:
```
results = requests.get(url).json()
```

I know Koreatown is a great spot for nightlife!

In [15]:
```
# function that extracts the category of the venue
def get_category_type(row):
    try:
        categories_list = row['categories']
    except:
        categories_list = row['venue.categories']

    if len(categories_list) == 0:
        return None
    else:
        return categories_list[0]['name']
```

In [16]:
```
venues = results['response']['groups'][0]['items']

nearby_venues = json_normalize(venues) # flatten JSON

# filter columns
filtered_columns = ['venue.name', 'venue.categories', 'venue.location.lat', 'venue.location.lng']
nearby_venues =nearby_venues.loc[:, filtered_columns]

# filter the category for each row
nearby_venues['venue.categories'] = nearby_venues.apply(get_category_type, axis=1)

# clean columns
nearby_venues.columns = [col.split(".")[-1] for col in nearby_venues.columns]

nearby_venues.head()
```

Out[16]:

	name	categories	lat	lng
0	Kang Ho Dong Baek Jeong	Korean Restaurant	34.063828	-118.297364
1	Document Coffee Bar	Coffee Shop	34.061254	-118.311050
2	Larchmont Village Wine & Cheese	Sandwich Place	34.075327	-118.323704
3	Salt & Straw	Ice Cream Shop	34.075836	-118.323535
4	Modo Yoga LA	Yoga Studio	34.067658	-118.343974

In [17]:
```
print('{} venues were returned by Foursquare for Koreatown area.'.format(nearby_venues.shape[0]))
```

```
100 venues were returned by Foursquare for Koreatown area.
```

2. Exploring the Neighborhoods in LA

In [18]:
```
def getNearbyVenues(names, latitudes, longitudes, radius=500):

    venues_list=[]
    for name, lat, lng in zip(names, latitudes, longitudes):
        print(name)

        # create the API request URL
        url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret={}&v={}&ll={},{}&radi
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            lat,
            lng,
            radius,
            LIMIT)

        # make the GET request
        results = requests.get(url).json()["response"]['groups'][28]['items']

        # return only relevant information for each nearby venue
        venues_list.append([(
            name,
            lat,
            lng,
            v['venue']['name'],
            v['venue']['location']['lat'],
            v['venue']['location']['lng'],
            v['venue']['categories'][0]['name']) for v in results])

    nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
    nearby_venues.columns = ['Neighborhood',
                  'Neighborhood Latitude',
                  'Neighborhood Longitude',
                  'Venue',
                  'Venue Latitude',
                  'Venue Longitude',
                  'Venue Category']

    return(nearby_venues)
```

In [19]:
```
nearby_venues.head()
```

Out[19]:

	name	categories	lat	lng
0	Kang Ho Dong Baek Jeong	Korean Restaurant	34.063828	-118.297364
1	Document Coffee Bar	Coffee Shop	34.061254	-118.311050
2	Larchmont Village Wine & Cheese	Sandwich Place	34.075327	-118.323704
3	Salt & Straw	Ice Cream Shop	34.075836	-118.323535
4	Modo Yoga LA	Yoga Studio	34.067658	-118.343974

In [20]:
```
nearby_venues.groupby('categories').count()
```

Out[20]:

categories	name	lat	lng
American Restaurant	1	1	1
Art Gallery	2	2	2
Art Museum	2	2	2
Bakery	1	1	1
Basketball Stadium	1	1	1
Bookstore	1	1	1
Boutique	2	2	2
Breakfast Spot	2	2	2
Brewery	1	1	1
Café	3	3	3
Climbing Gym	1	1	1
Coffee Shop	9	9	9
College Residence Hall	1	1	1
Concert Hall	1	1	1
Farmers Market	2	2	2
Food Truck	1	1	1
French Restaurant	1	1	1
German Restaurant	1	1	1
Grocery Store	1	1	1
Gym	1	1	1
Gymnastics Gym	1	1	1
Home Service	1	1	1
Hotel	6	6	6
Ice Cream Shop	4	4	4
Italian Restaurant	4	4	4
Korean Restaurant	1	1	1
Latin American Restaurant	1	1	1
Market	1	1	1
Mediterranean Restaurant	2	2	2
Movie Theater	2	2	2
Music Venue	1	1	1
New American Restaurant	2	2	2
Observatory	1	1	1
Park	5	5	5
Performing Arts Venue	1	1	1
Pizza Place	3	3	3
Plaza	1	1	1
Restaurant	1	1	1
Rock Club	1	1	1
Sandwich Place	2	2	2
Scenic Lookout	3	3	3
Science Museum	1	1	1
Sculpture Garden	1	1	1
Shopping Mall	1	1	1
Sushi Restaurant	2	2	2
Taco Place	2	2	2
Taiwanese Restaurant	1	1	1
Theater	2	2	2

categories	name	lat	lng
Trail	6	6	6
Wine Bar	1	1	1
Wine Shop	3	3	3
Yoga Studio	1	1	1

In [21]:
```
print('There are {} uniques categories.'.format(len(nearby_venues['name'].unique())))
```

```
There are 95 uniques categories.
```

In [22]:
```
nearby_venues.shape
```

Out[22]:
```
(100, 4)
```

In [23]:
```
nearby_venues.columns = ['Venue Name', 'Category', 'Lat', 'Lng']
nearby_venues.head()
```

Out[23]:

	Venue Name	Category	Lat	Lng
0	Kang Ho Dong Baek Jeong	Korean Restaurant	34.063828	-118.297364
1	Document Coffee Bar	Coffee Shop	34.061254	-118.311050
2	Larchmont Village Wine & Cheese	Sandwich Place	34.075327	-118.323704
3	Salt & Straw	Ice Cream Shop	34.075836	-118.323535
4	Modo Yoga LA	Yoga Studio	34.067658	-118.343974

In [24]:
```
LA_onehot = pd.get_dummies(nearby_venues['Category'], prefix="", prefix_sep="")
```

In [25]:
```
# add neighborhood_name column back to dataframe
LA_onehot['Neighborhood_name'] = LA_data['name']
LA_onehot.head()
```

Out[25]:

	American Restaurant	Art Gallery	Art Museum	Bakery	Basketball Stadium	Bookstore	Boutique	Breakfast Spot	Brewery	Café	Climbing Gym	Coffee Shop	College Residence Hall	Concer Hal
0	0	0	0	0	0	0	0	0	0	0	0	0	0	(
1	0	0	0	0	0	0	0	0	0	0	0	1	0	(
2	0	0	0	0	0	0	0	0	0	0	0	0	0	(
3	0	0	0	0	0	0	0	0	0	0	0	0	0	(
4	0	0	0	0	0	0	0	0	0	0	0	0	0	(

In [26]:
```
# I'm getting somewhere stopped here


# move neighborhood column to the first column
fixed_columns = [LA_onehot.columns[-1]] + list(LA_onehot.columns[:-1])
LA_onehot = LA_onehot[fixed_columns]

LA_onehot.head()
```

Out[26]:

	Neighborhood_name	American Restaurant	Art Gallery	Art Museum	Bakery	Basketball Stadium	Bookstore	Boutique	Breakfast Spot	Brewery	Café	Climbing Gym	Coffee Shop
0	Acton	0	0	0	0	0	0	0	0	0	0	0	(
1	Adams-Normandie	0	0	0	0	0	0	0	0	0	0	0	'
2	Agoura Hills	0	0	0	0	0	0	0	0	0	0	0	(
3	Agua Dulce	0	0	0	0	0	0	0	0	0	0	0	(
4	Alhambra	0	0	0	0	0	0	0	0	0	0	0	(

In [27]:
```
#grouped = venues_onehot.groupby('Street').mean().reset_index()
#grouped


LA_venues_grouped= LA_onehot.groupby('Neighborhood_name').mean().reset_index()
LA_venues_grouped.head()
```

Out[27]:

	Neighborhood_name	American Restaurant	Art Gallery	Art Museum	Bakery	Basketball Stadium	Bookstore	Boutique	Breakfast Spot	Brewery	Café	Climbing Gym	Coffee Shop
0	Acton	0	0	0	0	0	0	0	0	0	0	0	0
1	Adams-Normandie	0	0	0	0	0	0	0	0	0	0	0	1
2	Agoura Hills	0	0	0	0	0	0	0	0	0	0	0	0
3	Agua Dulce	0	0	0	0	0	0	0	0	0	0	0	0
4	Alhambra	0	0	0	0	0	0	0	0	0	0	0	0

In [28]:
```
LA_venues_grouped.shape
```

Out[28]:
```
(100, 53)
```

In [29]:
```
num_top_venues = 5

for hood in LA_venues_grouped['Neighborhood_name']:
    print("----"+hood+"----")
    temp = LA_venues_grouped[LA_venues_grouped['Neighborhood_name'] == hood].T.reset_index()
    temp.columns = ['venue','freq']
    temp = temp.iloc[1:]
    temp['freq'] = temp['freq'].astype(float)
    temp = temp.round({'freq': 2})
    print(temp.sort_values('freq', ascending=False).reset_index(drop=True).head(num_top_venues))
    print('\n')
```

```
----Acton----
                      venue  freq
0         Korean Restaurant   1.0
1                    Market   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Adams-Normandie----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Agoura Hills----
                      venue  freq
0            Sandwich Place   1.0
1               Art Gallery   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Agua Dulce----
                  venue  freq
0       Ice Cream Shop   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Alhambra----
                      venue  freq
0               Yoga Studio   1.0
1               Art Gallery   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Alondra Park----
                  venue  freq
0    French Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Altadena----
                      venue  freq
0               Pizza Place   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Angeles Crest----
                      venue  freq
0                Restaurant   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0
```

```
----Arcadia----
                      venue  freq
0      Taiwanese Restaurant   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Arleta----
                  venue  freq
0       Breakfast Spot   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Arlington Heights----
                      venue  freq
0                      Park   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Artesia----
                  venue  freq
0       Breakfast Spot   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Athens----
                      venue  freq
0             Movie Theater   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4               Music Venue   0.0


----Atwater Village----
                      venue  freq
0                 Wine Shop   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Avalon----
                  venue  freq
0                   Gym   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Avocado Heights----
                  venue  freq
0   Basketball Stadium   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Azusa----
                  venue  freq
0       Farmers Market   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0
```

```
----Baldwin Hills/Crenshaw----
                      venue  freq
0                   Theater   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Baldwin Park----
                   venue  freq
0           Art Museum   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Bel-Air----
                   venue  freq
0                  Hotel   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Bell----
                      venue  freq
0                     Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Bell Gardens----
                      venue  freq
0       American Restaurant   1.0
1               Art Gallery   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Bellflower----
                      venue  freq
0                 Wine Shop   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Beverly Crest----
                      venue  freq
0          Sculpture Garden   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Beverly Grove----
                      venue  freq
0                     Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Beverly Hills----
                    venue  freq
0  College Residence Hall   1.0
1     American Restaurant   0.0
2          Sandwich Place   0.0
3           Movie Theater   0.0
4             Music Venue   0.0
```

```
----Beverlywood----
                      venue  freq
0                 Taco Place   1.0
1       American Restaurant   0.0
2                  Rock Club   0.0
3  Mediterranean Restaurant   0.0
4              Movie Theater   0.0


----Boyle Heights----
                      venue  freq
0              Shopping Mall   1.0
1       American Restaurant   0.0
2                  Rock Club   0.0
3  Mediterranean Restaurant   0.0
4              Movie Theater   0.0


----Bradbury----
                    venue  freq
0       Farmers Market   1.0
1  American Restaurant   0.0
2                Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Brentwood----
                    venue  freq
0            Art Museum   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Broadway-Manchester----
                    venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Burbank----
                      venue  freq
0                   Theater   1.0
1       American Restaurant   0.0
2                  Rock Club   0.0
3  Mediterranean Restaurant   0.0
4              Movie Theater   0.0


----Calabasas----
                       venue  freq
0              Concert Hall   1.0
1                    Market   0.0
2             Movie Theater   0.0
3               Music Venue   0.0
4  New American Restaurant   0.0


----Canoga Park----
                    venue  freq
0              Brewery   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Carson----
                      venue  freq
0              Movie Theater   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4                Music Venue   0.0


----Carthay----
```

```
                      venue  freq
0                     Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Castaic----
                  venue  freq
0   Italian Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Castaic Canyons----
                  venue  freq
0            Bookstore   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Central-Alameda----
                      venue  freq
0                    Market   1.0
1               Art Gallery   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Century City----
                      venue  freq
0                 Wine Shop   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Cerritos----
                      venue  freq
0                     Plaza   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Charter Oak----
                       venue  freq
0  Latin American Restaurant   1.0
1               Art Gallery   0.0
2   Mediterranean Restaurant   0.0
3              Movie Theater   0.0
4                Music Venue   0.0


----Chatsworth----
                      venue  freq
0     Performing Arts Venue   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Chatsworth Reservoir----
                      venue  freq
0            Science Museum   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Chesterfield Square----
                  venue  freq
```

```
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Cheviot Hills----
                     venue  freq
0               Observatory   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Chinatown----
                     venue  freq
0                     Park   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Citrus----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Claremont----
                     venue  freq
0          Sushi Restaurant   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Commerce----
                     venue  freq
0   New American Restaurant   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Compton----
                     venue  freq
0               Music Venue   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Covina----
                     venue  freq
0               Art Gallery   1.0
1       American Restaurant   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Cudahy----
                  venue  freq
0       Ice Cream Shop   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Culver City----
                     venue  freq
0               Art Gallery   1.0
```

```
1       American Restaurant   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Cypress Park----
                  venue  freq
0           Food Truck   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Del Aire----
                  venue  freq
0         Home Service   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Del Rey----
                      venue  freq
0            Sandwich Place   1.0
1               Art Gallery   0.0
2  Mediterranean Restaurant   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----Desert View Highlands----
                  venue  freq
0    German Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Diamond Bar----
                      venue  freq
0          Sushi Restaurant   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Downey----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Downtown----
                  venue  freq
0               Bakery   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Duarte----
                  venue  freq
0         Climbing Gym   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Eagle Rock----
                      venue  freq
0                      Park   1.0
1       American Restaurant   0.0
```

```
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----East Compton----
                      venue  freq
0                     Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----East Hollywood----
                      venue  freq
0  Mediterranean Restaurant   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----East La Mirada----
                 venue  freq
0                Café   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----East Los Angeles----
                      venue  freq
0  Mediterranean Restaurant   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3             Movie Theater   0.0
4               Music Venue   0.0


----East Pasadena----
                      venue  freq
0            Scenic Lookout   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----East San Gabriel----
                 venue  freq
0                Café   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Echo Park----
                      venue  freq
0            Scenic Lookout   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----El Monte----
                      venue  freq
0                      Park   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----El Segundo----
                 venue  freq
0             Boutique   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
```

```
3        Movie Theater   0.0
4          Music Venue   0.0


----El Sereno----
                venue  freq
0               Hotel   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Elizabeth Lake----
                venue  freq
0       Ice Cream Shop   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Elysian Park----
                     venue  freq
0                     Park   1.0
1       American Restaurant   0.0
2              Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Elysian Valley----
                venue  freq
0       Ice Cream Shop   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Encino----
                venue  freq
0               Hotel   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Exposition Park----
                venue  freq
0         Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Fairfax----
                     venue  freq
0                Rock Club   1.0
1       American Restaurant   0.0
2              Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Florence----
                venue  freq
0       Gymnastics Gym   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Florence-Firestone----
                venue  freq
0               Hotel   1.0
1  American Restaurant   0.0
2              Market   0.0
3        Movie Theater   0.0
```

```
4          Music Venue   0.0


----Gardena----
                    venue  freq
0                Taco Place   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Glassell Park----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Glendale----
                    venue  freq
0              Pizza Place   1.0
1       American Restaurant   0.0
2              Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Glendora----
                    venue  freq
0           Scenic Lookout   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Gramercy Park----
                    venue  freq
0                   Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Granada Hills----
                  venue  freq
0                 Hotel   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Green Meadows----
                    venue  freq
0                Wine Bar   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Green Valley----
                  venue  freq
0        Grocery Store   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Griffith Park----
                  venue  freq
0                 Hotel   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0
```

```
----Hacienda Heights----
                      venue  freq
0               Pizza Place   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Hancock Park----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Hansen Dam----
                  venue  freq
0                 Café   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Harbor City----
                  venue  freq
0             Boutique   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Koreatown----
                  venue  freq
0   Italian Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----La Mirada----
                      venue  freq
0                     Trail   1.0
1       American Restaurant   0.0
2                 Rock Club   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0


----Northridge----
                  venue  freq
0          Coffee Shop   1.0
1  American Restaurant   0.0
2       Sandwich Place   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Vermont Square----
                  venue  freq
0   Italian Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0


----Vermont Vista----
                      venue  freq
0   New American Restaurant   1.0
1       American Restaurant   0.0
2               Art Gallery   0.0
3  Mediterranean Restaurant   0.0
4             Movie Theater   0.0
```

```
----Vermont-Slauson----
                 venue  freq
0   Italian Restaurant   1.0
1  American Restaurant   0.0
2               Market   0.0
3        Movie Theater   0.0
4          Music Venue   0.0
```

In [ ]:

In [30]:
```
def return_most_common_venues(row, num_top_venues):
    row_categories = row.iloc[1:]
    row_categories_sorted = row_categories.sort_values(ascending=False)

    return row_categories_sorted.index.values[0:num_top_venues]
```

In [31]:
```
num_top_venues = 5

indicators = ['st', 'nd', 'rd']

# create columns according to number of top venues
columns = ['Neighborhood_name']
for ind in np.arange(num_top_venues):
    try:
        columns.append('{}{} Most Common Venue'.format(ind+1, indicators[ind]))
    except:
        columns.append('{}th Most Common Venue'.format(ind+1))

# create a new dataframe
neighborhoods_venues_sorted = pd.DataFrame(columns=columns)
neighborhoods_venues_sorted['Neighborhood_name'] = LA_venues_grouped['Neighborhood_name']

for ind in np.arange(LA_venues_grouped.shape[0]):
    neighborhoods_venues_sorted.iloc[ind, 1:] = return_most_common_venues(LA_venues_grouped.iloc[ind, :], num

neighborhoods_venues_sorted.head(20)
```

Out[31]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
2	Agoura Hills	Sandwich Place	Yoga Studio	College Residence Hall	Hotel	Home Service
3	Agua Dulce	Ice Cream Shop	Yoga Studio	Wine Shop	Hotel	Home Service
4	Alhambra	Yoga Studio	Wine Shop	Ice Cream Shop	Hotel	Home Service
5	Alondra Park	French Restaurant	Yoga Studio	Wine Shop	Ice Cream Shop	Hotel
6	Altadena	Pizza Place	Yoga Studio	Italian Restaurant	Hotel	Home Service
7	Angeles Crest	Restaurant	Yoga Studio	Italian Restaurant	Hotel	Home Service
8	Arcadia	Taiwanese Restaurant	Yoga Studio	College Residence Hall	Hotel	Home Service
9	Arleta	Breakfast Spot	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
10	Arlington Heights	Park	Yoga Studio	Italian Restaurant	Hotel	Home Service
11	Artesia	Breakfast Spot	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
12	Athens	Movie Theater	Yoga Studio	Italian Restaurant	Hotel	Home Service
13	Atwater Village	Wine Shop	Yoga Studio	Ice Cream Shop	Hotel	Home Service
14	Avalon	Gym	Yoga Studio	Wine Shop	Ice Cream Shop	Hotel
15	Avocado Heights	Basketball Stadium	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
16	Azusa	Farmers Market	Yoga Studio	Wine Shop	Ice Cream Shop	Hotel
17	Baldwin Hills/Crenshaw	Theater	Yoga Studio	College Residence Hall	Hotel	Home Service
18	Baldwin Park	Art Museum	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
19	Bel-Air	Hotel	Yoga Studio	Wine Shop	Ice Cream Shop	Home Service

In [32]:
```
#select neighborhoods where 1stMost Common Venue Korean rest. and 2nd most common venue is Coffee Shop
#I need to establish a venue of Korean BBQ and Boba tea in the area.

df_Korean1st= neighborhoods_venues_sorted.loc[neighborhoods_venues_sorted['1st Most Common Venue'] == 'Korean

df_Korean1st
```

Out[32]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service

In [33]:
```
df_Coffee1st= neighborhoods_venues_sorted.loc[neighborhoods_venues_sorted['1st Most Common Venue'] == 'Coffee

df_Coffee1st
```

Out[33]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
30	Broadway-Manchester	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
44	Chesterfield Square	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
47	Citrus	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
59	Downey	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
77	Exposition Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
82	Glassell Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
91	Hancock Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
96	Northridge	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel

In [34]:
```
df_Coff_Kor= [df_Korean1st,df_Coffee1st]
result = pd.concat(df_Coff_Kor)

result
```

Out[34]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
30	Broadway-Manchester	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
44	Chesterfield Square	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
47	Citrus	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
59	Downey	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
77	Exposition Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
82	Glassell Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
91	Hancock Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel
96	Northridge	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel

In [35]:
```
result_location = result.join(LA_data.set_index('name'), on='Neighborhood_name')
result_location
```

Out[35]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	set	latitude	longitude
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service	L.A. County Neighborhoods (Current)	-118.169810	34.497355
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.300208	34.031461
30	Broadway-Manchester	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.275352	33.941224
44	Chesterfield Square	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.313208	33.983763
47	Citrus	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-117.892164	34.116180
59	Downey	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.130423	33.937677
77	Exposition Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.298876	34.018262
82	Glassell Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.236427	34.114405
91	Hancock Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.335009	34.072759
96	Northridge	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.527969	34.238805

In [36]:
```
#df results
result_location['lng'] = result_location['latitude']
result_location.head()
```

Out[36]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	set	latitude	longitude	lng
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service	L.A. County Neighborhoods (Current)	-118.169810	34.497355	-118.169810
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.300208	34.031461	-118.300208
30	Broadway-Manchester	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.275352	33.941224	-118.275352
44	Chesterfield Square	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.313208	33.983763	-118.313208
47	Citrus	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-117.892164	34.116180	-117.892164

In [37]:
```
result_location['lat'] = result_location['longitude']
result_location
```

Out[37]:

	Neighborhood_name	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	set	latitude	longitude	lng	la
0	Acton	Korean Restaurant	Wine Shop	Ice Cream Shop	Hotel	Home Service	L.A. County Neighborhoods (Current)	-118.169810	34.497355	-118.169810	34.49735
1	Adams-Normandie	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.300208	34.031461	-118.300208	34.03146
30	Broadway-Manchester	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.275352	33.941224	-118.275352	33.94122
44	Chesterfield Square	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.313208	33.983763	-118.313208	33.98376
47	Citrus	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-117.892164	34.116180	-117.892164	34.11618
59	Downey	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.130423	33.937677	-118.130423	33.93767
77	Exposition Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.298876	34.018262	-118.298876	34.01826
82	Glassell Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.236427	34.114405	-118.236427	34.11440
91	Hancock Park	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.335009	34.072759	-118.335009	34.07275
96	Northridge	Coffee Shop	Yoga Studio	Concert Hall	Ice Cream Shop	Hotel	L.A. County Neighborhoods (Current)	-118.527969	34.238805	-118.527969	34.23880

In [38]:
```
result_location.shape
```

Out[38]:
```
(10, 11)
```

Based on the above table, Acton is the only predominantly location for Korean Restaurants.

Conveniently, coffee shops are not on their top 5 lists of venues.

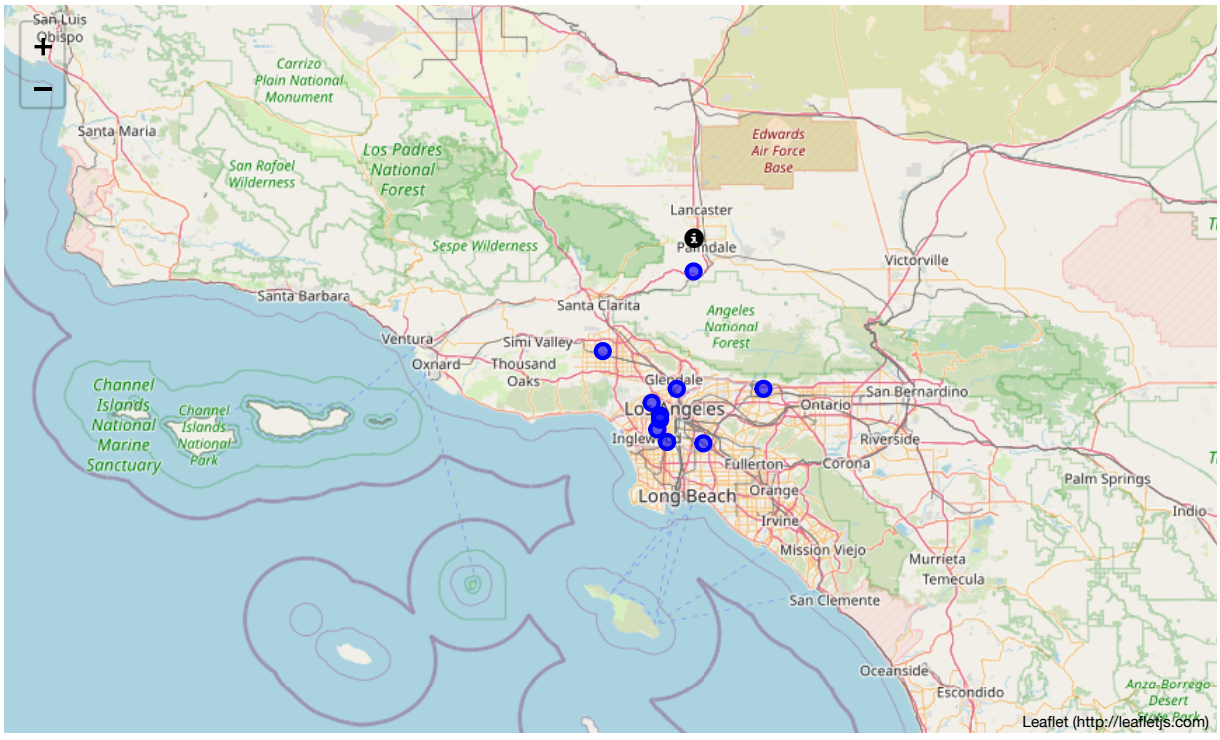
Make a Map of the Neighborhoods and Venues within top two picks

Make maps here

instantiate a feature group for the incidents in the dataframe incidents = folium.map.FeatureGroup() # loop through the 100 crimes and add each to the incidents feature group for lat, lng, in zip(df_incidents.Y, df_incidents.X): incidents.add_child(folium.features.CircleMarker([lat, lng], radius=5, # define how big you want the circle markers to be color='yellow', fill=True, fill_color='blue', fill_opacity=0.6)) # add incidents to map sanfran_map.add_child(incidents)

In [40]:
```
venues_map = folium.Map(location=[latitude, longitude], zoom_start=8) # generate map centred around the Conra

# add a red circle marker to represent the Acton
#folium.features.CircleMarker(
 #   [lat, lng],
  #  radius=10,
   # color='red',
    #popup='Citrus',
#    fill = True,
 #   fill_color = 'red',
  #  fill_opacity = 0.6
# ).add_to(venues_map)

folium.Marker(
    location=[34.497355, -118.169810],
    popup='Acton, Los Angeles',
    icon=folium.Icon(color='red', icon='info-sign')
).add_to(venues_map)

# add the Italian restaurants as blue circle markers
for lat, lng, Neighborhood_name in zip(result_location.lat, result_location.lng, result_location.Neighborhood
    folium.features.CircleMarker(
        [lat, lng],
        radius=5,
        color='blue',
        #popup=label,
        fill = True,
        fill_color='blue',
        fill_opacity=0.6
    ).add_to(venues_map)



# display map
venues_map
```

Out[40]:



The blue respresent the neighborhoods where Coffee Shops are the 1st most common venues otherwise listed as having a high concentration of coffee shops. Acton, Los Angeles (labels by the red drop dot) is secluded from these high coffee shop concesntrations and therefore represents a potential for growht in expanding the LA coffee drinking market to the Korean Resturant area. While catering to the Korean Restaurant foods and open in the late evening hours, caffeine drinks and possibly alcohol infusions will make a nice post concert hall evening.

In [ ]:
```
```

#use this as example for lat, lng, borough, neighborhood in zip(neighborhoods['Latitude'], neighborhoods['Longitude'], neighborhoods['Borough'], neighborhoods['Neighborhood']): label = '{}, {}'.format(neighborhood, borough) label = folium.Popup(label, parse_html=True) folium.CircleMarker([lat, lng], radius=5, popup=label, color='blue', fill=True, fill_color='#3186cc', fill_opacity=0.7, parse_html=False).add_to(map_newyork)

In [ ]:

In [ ]:

In [ ]:

Make Bar Charts Here of Top Restaurants

In [84]:
```
# use the inline backend to generate the plots within the browser
%matplotlib inline

import matplotlib as mpl
import matplotlib.pyplot as plt

mpl.style.use('ggplot') # optional: for ggplot-like style

# check for latest version of Matplotlib
print ('Matplotlib version: ', mpl.__version__) # >= 2.0.0
```

```
Matplotlib version:  3.3.0
```

In [99]:
```
test=nearby_venues
test.head()
```

Out[99]:

	Venue Name	Category	Lat	Lng	Neighborhood_name
0	Ahgassi Gopchang	Korean Restaurant	34.063397	-118.303863	Acton
1	Hae Jang Chon Korean BBQ Restaurant	Korean Restaurant	34.063888	-118.306075	Adams-Normandie
2	Kyochon Chicken	Korean Restaurant	34.063830	-118.306490	Agoura Hills
3	Byul Yang Gopchang	BBQ Joint	34.063668	-118.305999	Agua Dulce
4	BCD Tofu House	Korean Restaurant	34.061961	-118.302713	Alhambra

In [103]:
```
# add neighborhood_name column back to dataframe
test['Neighborhood_name'] = LA_data['name']
test
```

Out[103]:

	Venue Name	Category	Lat	Lng	Neighborhood_name
0	Ahgassi Gopchang	Korean Restaurant	34.063397	-118.303863	Acton
1	Hae Jang Chon Korean BBQ Restaurant	Korean Restaurant	34.063888	-118.306075	Adams-Normandie
2	Kyochon Chicken	Korean Restaurant	34.063830	-118.306490	Agoura Hills
3	Byul Yang Gopchang	BBQ Joint	34.063668	-118.305999	Agua Dulce
4	BCD Tofu House	Korean Restaurant	34.061961	-118.302713	Alhambra
5	Sushi One	Sushi Restaurant	34.063571	-118.308160	Alondra Park
6	Seoul Pho	Vietnamese Restaurant	34.065871	-118.308796	Artesia
7	Cafe Nandarang	Café	34.063816	-118.305862	Altadena
8	The Normandie Club	Hotel Bar	34.063555	-118.300856	Angeles Crest
9	Bumsan Organic Milk Bar	Ice Cream Shop	34.064297	-118.309052	Arcadia
10	Caffe Concerto	Café	34.063057	-118.306395	Arleta
11	Ubatuba Açai	Brazilian Restaurant	34.063906	-118.309375	Arlington Heights
12	Yang san bak	Korean Restaurant	34.063955	-118.300540	Athens
13	Monty's Good Burger	Burger Joint	34.064797	-118.309034	Atwater Village
14	Han Bat Sul Lung Tang	Korean Restaurant	34.065474	-118.309471	Avalon
15	Brothers BBQ 형제갈비	Korean Restaurant	34.063416	-118.302565	Avocado Heights
16	Jun Won	Korean Restaurant	34.066871	-118.308867	Azusa
17	YUPDDUK LA	Korean Restaurant	34.063813	-118.300586	Vermont-Slauson
18	Cassell's Hamburgers	Burger Joint	34.063417	-118.300411	Baldwin Hills/Crenshaw
19	H Mart	Grocery Store	34.062955	-118.309737	Baldwin Park
20	The Wiltern	Concert Hall	34.061200	-118.308454	Bel-Air
21	The LINE Hotel	Hotel	34.062040	-118.300909	Bellflower
22	somi somi	Ice Cream Shop	34.062967	-118.309696	Bell Gardens
23	Poketo	Clothing Store	34.061798	-118.300865	Green Valley
24	Sul & Beans	Dessert Shop	34.062958	-118.310013	Bell
25	Bonjuk	Korean Restaurant	34.061734	-118.301980	Beverly Crest
26	Alfred Coffee Koreatown	Café	34.061756	-118.300938	Beverly Grove
27	Ddong Ggo	Korean Restaurant	34.064442	-118.308654	Burbank
28	Bon Shabu	Shabu-Shabu Restaurant	34.063519	-118.302010	Koreatown
29	Break Room 86	Speakeasy	34.061803	-118.301088	Beverly Hills
30	Kashira	Japanese Restaurant	34.061963	-118.308933	Beverlywood
31	Myung Dong Kyoja (명동교자) (Myung Dong Kyoja)	Korean Restaurant	34.061495	-118.304077	Boyle Heights
32	Feng Mao	Asian Restaurant	34.066873	-118.308937	Bradbury
33	Roll Roll Roll	Sushi Restaurant	34.061747	-118.305866	Brentwood
34	Daiso Japan	Convenience Store	34.062980	-118.309817	Broadway-Manchester
35	Mapo Kkak Du Gi (마포깍두기)	Korean Restaurant	34.063822	-118.300809	Calabasas
36	Pool at Line Hotel	Pool	34.061744	-118.301374	Canoga Park
37	Paris Baguette	Bakery	34.062902	-118.309452	Carson
38	Madang Plaza	Shopping Mall	34.062956	-118.309763	Carthay
39	Alchemist Coffee Project at The Pearl	Coffee Shop	34.061409	-118.305746	Castaic Canyons
40	Myungrang Hot Dog (명랑 핫도그)	Food Service	34.065654	-118.308696	Chatsworth
41	Anko by Serve O	Café	34.067135	-118.308998	Castaic
42	Jangchungdong Pork Feet	Korean Restaurant	34.066460	-118.309576	Central-Alameda
43	The Kimbap	Korean Restaurant	34.067132	-118.309017	Century City
44	Yerim Korean BBQ	Korean Restaurant	34.068971	-118.305157	Cerritos
45	Orangetheory Fitness	Gym / Fitness Center	34.061505	-118.305735	Charter Oak
46	Beard Papa's	Bakery	34.062849	-118.309189	Chatsworth Reservoir

	Venue Name	Category	Lat	Lng	Neighborhood_name
47	Gong Cha	Bubble Tea Shop	34.061789	-118.308835	Chesterfield Square
48	The Coffee Bean & Tea Leaf	Coffee Shop	34.065872	-118.308678	Cheviot Hills
49	Bulgogi Hut	Korean Restaurant	34.061529	-118.303221	Chinatown
50	Le Comptoir at the Hotel Normandie	Restaurant	34.063627	-118.300534	Citrus
51	Buil Samgye Tang	Korean Restaurant	34.068913	-118.305630	Claremont
52	Phoever Yum	Vietnamese Restaurant	34.066483	-118.309351	Northridge
53	Hotel Normandie	Hotel	34.063318	-118.300601	Commerce
54	Klat	Café	34.062845	-118.309160	Compton
55	Ombu Grill	Korean Restaurant	34.067036	-118.308823	Cypress Park
56	Openaire	Restaurant	34.061674	-118.300984	La Mirada
57	Fountains Of Wilshire Blvd	Scenic Lookout	34.062045	-118.307156	Covina
58	T-Mobile	Mobile Phone Shop	34.061561	-118.302962	Cudahy
59	Starbucks	Coffee Shop	34.061339	-118.306407	Culver City
60	Terra Cotta	Asian Restaurant	34.061697	-118.308202	Del Aire
61	Aroma Golf Range	Golf Course	34.060937	-118.306472	Del Rey
62	Apt 503	Lounge	34.061463	-118.306828	Desert View Highlands
63	Pachecos Tacos	Food Truck	34.061322	-118.301350	Diamond Bar
64	Redbox	Video Store	34.061700	-118.308010	Downey
65	Wells Fargo	Bank	34.061514	-118.302143	Downtown
66	Pharaoh Karaoke Lounge	Karaoke Bar	34.061523	-118.306666	Duarte
67	CVS pharmacy	Pharmacy	34.061927	-118.308149	Eagle Rock
68	Avis Car Rental	Rental Car Location	34.061397	-118.303813	East Compton
69	Chase Bank	Bank	34.062031	-118.307612	East Hollywood
70	Gowess Food Truck (Indonesian/Mexican)	Indonesian Restaurant	34.061718	-118.306871	East La Mirada
71	Starbucks	Coffee Shop	34.062126	-118.301079	Elizabeth Lake
72	Restaurant Namsan (남산)	Korean Restaurant	34.063755	-118.300827	East Los Angeles
73	JJ Grand Hotel	Hotel	34.062693	-118.304054	East Pasadena
74	Subway	Sandwich Place	34.061957	-118.305901	East San Gabriel
75	Cafe Scent	Korean Restaurant	34.060673	-118.306578	Echo Park
76	Denny's	Breakfast Spot	34.061271	-118.308028	El Monte

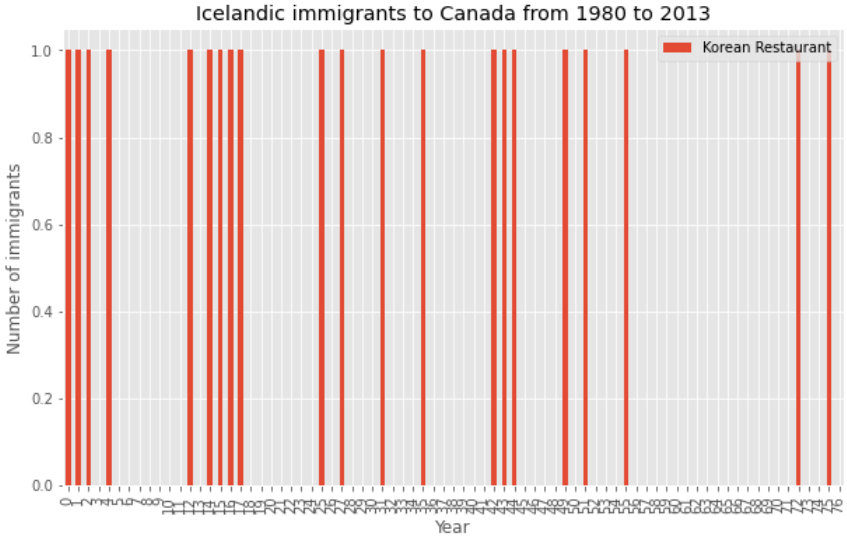
In [101]:
```
# step 1 get data set and ready
LA_Korea=test[['Neighborhood_name','Category']]
```

In [102]:
```
LA_Korea.head()
```

Out[102]:

	Neighborhood_name	Category
0	Acton	Korean Restaurant
1	Adams-Normandie	Korean Restaurant
2	Agoura Hills	Korean Restaurant
3	Agua Dulce	BBQ Joint
4	Alhambra	Korean Restaurant

In [91]:
```
# step 2: plot data
LA_keepers.plot(kind='bar', figsize=(10, 6))

plt.xlabel('Year') # add to x-label to the plot
plt.ylabel('Number of Korean Restaurants') # add y-label to the plot
plt.title('Korean Resturants') # add title to the plot

plt.show()
```



In [ ]:

In [ ]:

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In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [84]:
```
# type your answer here

LA_venues = getNearbyVenues(names=LA_data['name'],
                                  latitudes=LA_data['latitude'],
                                  longitudes=LA_data['longitude']
                                 )
```

```
Acton

---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-84-0dc5fedc2bb0> in <module>
      3 LA_venues = getNearbyVenues(names=LA_data['name'],
      4                                   latitudes=LA_data['latitude'],
----> 5                                   longitudes=LA_data['longitude']
      6                                  )
      7

<ipython-input-70-e7dc9769b37c> in getNearbyVenues(names, latitudes, longitudes, radius)
     16
     17         # make the GET request
---> 18         results = requests.get(url).json()["response"]['groups'][28]['items']
     19
     20         # return only relevant information for each nearby venue

KeyError: 'groups'
```

In [57]:
```
LA_data.groupby('name').count().head()
```

Out[57]:

name	set	latitude	longitude
Acton	1	1	1
Adams-Normandie	1	1	1
Agoura Hills	1	1	1
Agua Dulce	1	1	1
Alhambra	1	1	1

In [58]:
```
print('There are {} uniques categories.'.format(len(LA_data['set'].unique())))
```

```
There are 1 uniques categories.
```

In [59]:
```
LA_onehot = pd.get_dummies(nearby_venues[['set']], prefix="", prefix_sep="")

# add neighborhood column back to dataframe
LA_onehot['name'] = LA_data['name']

# move neighborhood column to the first column
fixed_columns = [La_onehot.columns[-1]] + list(LA_onehot.columns[:-1])
LA_onehot = LA_onehot[fixed_columns]

LA_onehot.head()
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-59-8bac5d3ae154> in <module>
----> 1 LA_onehot = pd.get_dummies(nearby_venues[['set']], prefix="", prefix_sep="")
      2
      3 # add neighborhood column back to dataframe
      4 LA_onehot['name'] = LA_data['name']
      5

~/conda/envs/python/lib/python3.6/site-packages/pandas/core/frame.py in __getitem__(self, key)
   2903             if is_iterator(key):
   2904                 key = list(key)
-> 2905             indexer = self.loc._get_listlike_indexer(key, axis=1, raise_missing=True)[1]
   2906
   2907         # take() does not accept boolean indexers

~/conda/envs/python/lib/python3.6/site-packages/pandas/core/indexing.py in _get_listlike_indexer(self, k
   1252             keyarr, indexer, new_indexer = ax._reindex_non_unique(keyarr)
   1253
-> 1254         self._validate_read_indexer(keyarr, indexer, axis, raise_missing=raise_missing)
   1255         return keyarr, indexer
   1256

~/conda/envs/python/lib/python3.6/site-packages/pandas/core/indexing.py in _validate_read_indexer(self,
   1296             if missing == len(indexer):
   1297                 axis_name = self.obj._get_axis_name(axis)
-> 1298                 raise KeyError(f"None of [{key}] are in the [{axis_name}]")
   1299
   1300             # We (temporarily) allow for some missing keys with .loc, except in

KeyError: "None of [Index(['set'], dtype='object')] are in the [columns]"
```

In [ ]:
```
```