

FoodBusiness

October 19, 2020

0.1 DATA ANALYSIS

```
[1]: import pandas as pd
import numpy as np
!pip install geopy
%matplotlib inline
import matplotlib as mpl
import matplotlib.pyplot as plt
from geopy.geocoders import Nominatim
!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you've
# haven't completed the Foursquare API lab
import folium # map rendering library
!conda install -c anaconda seaborn --yes
# import library
import seaborn as sns
```

Collecting geopy

```
  Downloading https://files.pythonhosted.org/packages/07/e1/9c72de674d5c2b
8fcb0738a5ceeb5424941fefafa080bfe4e240d0bacb5a38/geopy-2.0.0-py3-none-any.whl
(111kB)
```

```
 | 112kB 5.2MB/s eta 0:00:01
```

Collecting geographiclib<2,>=1.49 (from geopy)

```
  Downloading https://files.pythonhosted.org/packages/8b/62/26ec95a98ba642991631
99e95ad1b0e34ad3f4e176e221c40245f211e425/geographiclib-1.50-py3-none-any.whl
```

Installing collected packages: geographiclib, geopy

Successfully installed geographiclib-1.50 geopy-2.0.0

Collecting package metadata (current_repodata.json): done

Solving environment: failed with initial frozen solve. Retrying with flexible solve.

Collecting package metadata (repodata.json): done

Solving environment: done

```
## Package Plan ##
```

```
environment location: /home/jupyterlab/conda/envs/python
```

```
added / updated specs:
```

```
- folium=0.5.0
```

The following packages will be downloaded:

package	build			
altair-4.1.0	py_1	614 KB	conda-forge	
branca-0.4.1	py_0	26 KB	conda-forge	
brotlipy-0.7.0	py36he6145b8_1001	347 KB	conda-forge	
certifi-2020.6.20	py36h9880bd3_2	151 KB	conda-forge	
chardet-3.0.4	py36h9880bd3_1008	194 KB	conda-forge	
cryptography-3.1.1	py36h5d711a5_1	623 KB	conda-forge	
entrypoints-0.3	py36h9f0ad1d_1002	13 KB	conda-forge	
folium-0.5.0	py_0	45 KB	conda-forge	
importlib_metadata-2.0.0	1	3 KB	conda-forge	
jsonschema-3.2.0	py_2	45 KB	conda-forge	
markupsafe-1.1.1	py36he6145b8_2	27 KB	conda-forge	
pandas-1.1.3	py36h7c3b610_2	10.6 MB	conda-forge	
pyrsistent-0.17.3	py36h8c4c3a4_1	89 KB	conda-forge	
pysocks-1.7.1	py36h9880bd3_2	27 KB	conda-forge	
toolz-0.11.1	py_0	46 KB	conda-forge	
vincent-0.4.4	py_1	28 KB	conda-forge	

	Total:	12.8 MB		

The following NEW packages will be INSTALLED:

altair	conda-forge/noarch::altair-4.1.0-py_1
attrs	conda-forge/noarch::attrs-20.2.0-pyh9f0ad1d_0
branca	conda-forge/noarch::branca-0.4.1-py_0
brotlipy	conda-forge/linux-64::brotlipy-0.7.0-py36he6145b8_1001
chardet	conda-forge/linux-64::chardet-3.0.4-py36h9880bd3_1008
cryptography	conda-forge/linux-64::cryptography-3.1.1-py36h5d711a5_1
entrypoints	conda-forge/linux-64::entrypoints-0.3-py36h9f0ad1d_1002
folium	conda-forge/noarch::folium-0.5.0-py_0
idna	conda-forge/noarch::idna-2.10-pyh9f0ad1d_0
importlib_metadata	conda-forge/noarch::importlib_metadata-2.0.0-1
jinja2	conda-forge/noarch::jinja2-2.11.2-pyh9f0ad1d_0
jsonschema	conda-forge/noarch::jsonschema-3.2.0-py_2
markupsafe	conda-forge/linux-64::markupsafe-1.1.1-py36he6145b8_2
pandas	conda-forge/linux-64::pandas-1.1.3-py36h7c3b610_2
pyopenssl	conda-forge/noarch::pyopenssl-19.1.0-py_1
pyrsistent	conda-forge/linux-64::pyrsistent-0.17.3-py36h8c4c3a4_1
pysocks	conda-forge/linux-64::pysocks-1.7.1-py36h9880bd3_2
pytz	conda-forge/noarch::pytz-2020.1-pyh9f0ad1d_0
requests	conda-forge/noarch::requests-2.24.0-pyh9f0ad1d_0
toolz	conda-forge/noarch::toolz-0.11.1-py_0
urllib3	conda-forge/noarch::urllib3-1.25.10-py_0

```
vincent           conda-forge/noarch::vincent-0.4.4-py_1
```

The following packages will be UPDATED:

```
certifi           2020.6.20-py36h9f0ad1d_0 -->
2020.6.20-py36h9880bd3_2
```

Downloading and Extracting Packages

markupsafe-1.1.1	27 KB	#####	#####	#####	100%
certifi-2020.6.20	151 KB	#####	#####	#####	100%
pyrsistent-0.17.3	89 KB	#####	#####	#####	100%
cryptography-3.1.1	623 KB	#####	#####	#####	100%
importlib_metadata-2	3 KB	#####	#####	#####	100%
jsonschema-3.2.0	45 KB	#####	#####	#####	100%
entrypoints-0.3	13 KB	#####	#####	#####	100%
pandas-1.1.3	10.6 MB	#####	#####	#####	100%
folium-0.5.0	45 KB	#####	#####	#####	100%
pysocks-1.7.1	27 KB	#####	#####	#####	100%
brotlipy-0.7.0	347 KB	#####	#####	#####	100%
chardet-3.0.4	194 KB	#####	#####	#####	100%
branca-0.4.1	26 KB	#####	#####	#####	100%
altair-4.1.0	614 KB	#####	#####	#####	100%
toolz-0.11.1	46 KB	#####	#####	#####	100%
vincent-0.4.4	28 KB	#####	#####	#####	100%

Preparing transaction: done

Verifying transaction: done

Executing transaction: done

Collecting package metadata (current_repodata.json): done

Solving environment: done

```
## Package Plan ##
```

```
environment location: /home/jupyterlab/conda/envs/python
```

added / updated specs:

- seaborn

The following packages will be downloaded:

package	build			
blas-1.0	openblas	48 KB	anaconda	
ca-certificates-2020.10.14	0	128 KB	anaconda	
certifi-2020.6.20	py36_0	160 KB	anaconda	
dbus-1.13.16	hb2f20db_0	589 KB	anaconda	

gst-plugins-base-1.14.0		hbbd80ab_1	4.8 MB
gstreamer-1.14.0		hb453b48_1	3.1 MB
matplotlib-3.3.1		0	24 KB anaconda
matplotlib-base-3.3.1		py36h817c723_0	6.7 MB anaconda
openssl-1.1.1h		h7b6447c_0	3.8 MB anaconda
pyqt-5.9.2		py36h22d08a2_1	5.6 MB anaconda
qt-5.9.7		h5867ecd_1	68.5 MB
scipy-1.5.2		py36habc2bb6_0	18.5 MB anaconda
seaborn-0.11.0		py_0	216 KB anaconda
sip-4.19.24		py36he6710b0_0	297 KB anaconda
<hr/>			
		Total:	112.5 MB

The following NEW packages will be INSTALLED:

blas	anaconda/linux-64::blas-1.0-openblas
dbus	anaconda/linux-64::dbus-1.13.16-hb2f20db_0
gst-plugins-base	pkgs/main/linux-64::gst-plugins-base-1.14.0-hbbd80ab_1
gstreamer	pkgs/main/linux-64::gstreamer-1.14.0-hb453b48_1
matplotlib	anaconda/linux-64::matplotlib-3.3.1-0
pyqt	anaconda/linux-64::pyqt-5.9.2-py36h22d08a2_1
qt	pkgs/main/linux-64::qt-5.9.7-h5867ecd_1
scipy	anaconda/linux-64::scipy-1.5.2-py36habc2bb6_0
seaborn	anaconda/noarch::seaborn-0.11.0-py_0
sip	anaconda/linux-64::sip-4.19.24-py36he6710b0_0

The following packages will be UPDATED:

```
ca-certificates      conda-forge::ca-certificates-2020.6.2~ --> anaconda::ca-
certificates-2020.10.14-0
```

The following packages will be SUPERSEDED by a higher-priority channel:

```
certifi              conda-forge::certifi-2020.6.20-py36h9~ -->
anaconda::certifi-2020.6.20-py36_0
matplotlib-base      conda-forge::matplotlib-base-3.3.2-py~ -->
anaconda::matplotlib-base-3.3.1-py36h817c723_0
openssl              conda-forge::openssl-1.1.1h-h516909a_0 -->
anaconda::openssl-1.1.1h-h7b6447c_0
```

Downloading and Extracting Packages

pyqt-5.9.2	5.6 MB	#####	#####	100%
scipy-1.5.2	18.5 MB	#####	#####	100%
sip-4.19.24	297 KB	#####	#####	100%
blas-1.0	48 KB	#####	#####	100%
dbus-1.13.16	589 KB	#####	#####	100%

```
seaborn-0.11.0           | 216 KB  | #####| 100%
gst-plugins-base-1.1      | 4.8 MB  | #####| 100%
ca-certificates-2020     | 128 KB  | #####| 100%
certifi-2020.6.20        | 160 KB  | #####| 100%
matplotlib-3.3.1         | 24 KB   | #####| 100%
openssl-1.1.1h           | 3.8 MB  | #####| 100%
gstreamer-1.14.0          | 3.1 MB  | #####| 100%
qt-5.9.7                  | 68.5 MB | #####| 100%
matplotlib-base-3.3.1    | 6.7 MB  | #####| 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
```

```
[2]: print("Instalacion completa")
```

```
Instalacion completa
```

0.2 LOADING DATA

```
[4]: coordinates= pd.read_csv(r'coordenadas.csv')
```

```
[20]: coordinates.dtypes
```

```
[20]: Distrito      int64
Macrodistrito   object
Latitude       float64
Longitude       float64
dtype: object
```

```
[21]: coordinates.head()
```

```
[21]:   Distrito Macrodistrito   Latitude   Longitude
0            1           Centro -16.496946 -68.133407
1            2           Centro -16.499426 -68.122380
2            3          Cotahuma -16.514952 -68.129473
3            4          Cotahuma -16.537604 -68.135559
4            5          Cotahuma -16.494808 -68.151444
```

```
[7]: growing= pd.read_csv(r'crecimiento.csv')
```

```
[22]: growing.dtypes
```

```
[22]: Actividad_Economica      object
Crecimiento          float64
Participacion         float64
dtype: object
```

```
[8]: growing.head()
```

```
[8]:          Actividad_Economica  Crecimiento  Participacion
0  Agricultura-Silvicultura-Caza-Pezca        4.09       7.24
1      Extraccion de Minas y Canteras        5.36       6.15
2      Industrias Manufactureras        3.87       8.76
3      Electricidad Gas y Agua        3.50       2.29
4            Construccion        -2.76       1.68
```

```
[9]: population= pd.read_csv(r'poblacion_la_paz.csv')
```

```
[23]: population.dtypes
```

```
[23]: Distrito           int64
Habitantes         int64
Superficie_km2    float64
Densidad_hab_km2 float64
Hombres            float64
Mujeres            float64
edad_0_14          float64
edad_15_64          float64
edad_65_mas        float64
Hogares             int64
dtype: object
```

```
[10]: population.head()
```

```
[10]:   Distrito  Habitantes  Superficie_km2  Densidad_hab_km2  Hombres \
0          3      35944      2.362766     15212.67870  46.981416
1          4      53461      12.471605     4286.61748  48.270702
2          5      50716      1.579951     32099.72968  48.091332
3          6      38916      1.288748     30196.74909  50.552472
4          7      61887      1.577995     39218.75545  47.415451

      Mujeres  edad_0_14  edad_15_64  edad_65_mas  Hogares
0  53.018584  19.878144  69.398654  10.723202  11963
1  51.729298  27.345168  67.251361  5.403472  15605
2  51.908668  27.299077  67.283962  5.416961  14945
3  49.447528  18.223867  72.212890  9.563243  12306
4  52.584549  25.213696  68.522326  6.263978  18783
```

```
[11]: business=pd.read_csv(r'unidades_economicas.csv')
```

```
[24]: business.dtypes
```

```
[24]: DEPARTAMENTO          object
2019                int64
2020                int64
VARIACION_ABSOLUTA    int64
```

```
VARIACION_RELATIVA      float64  
dtype: object
```

```
[12]: business.head()
```

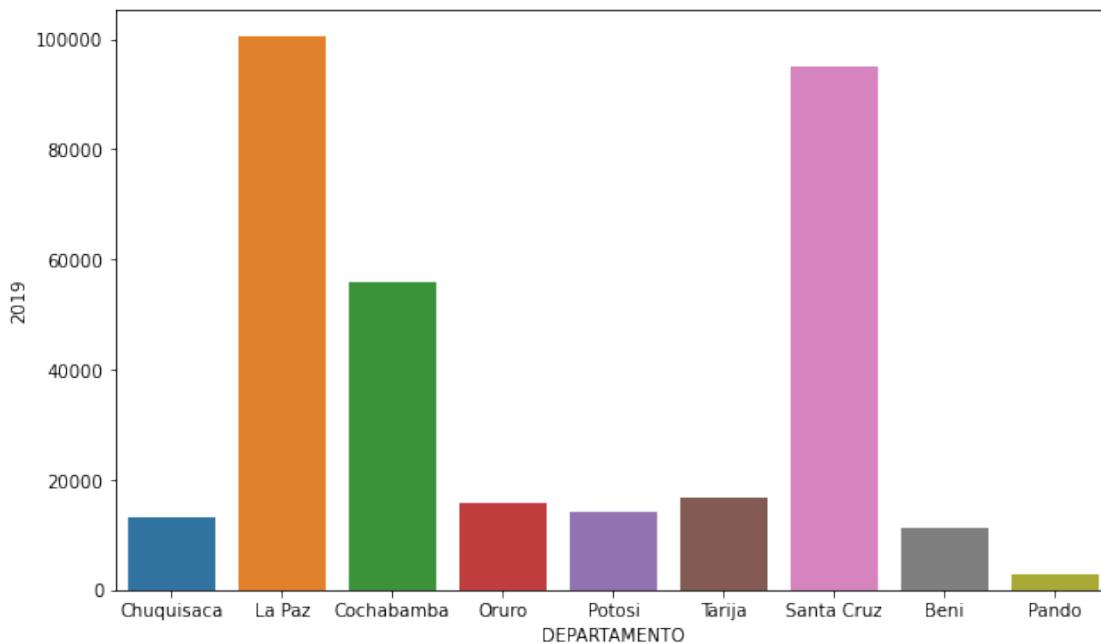
```
[12]:   DEPARTAMENTO    2019    2020  VARIACION_ABSOLUTA  VARIACION_RELATIVA  
0    Chuquisaca     13344   13636            292           2.19  
1      La Paz      100445  103395           2950          2.94  
2    Cochabamba    55973   56863            890           1.59  
3       Oruro      15735   16007            272           1.73  
4      Potosi      14194   14578            384           2.71
```

0.3 ANALYSISNG DATA

Let's see the differences between cities in relation to the number of economic units

```
[30]: plt.figure(figsize=(10,6))  
sns.barplot(x="DEPARTAMENTO", y="2019", data=business)
```

```
[30]: <AxesSubplot:xlabel='DEPARTAMENTO', ylabel='2019'>
```



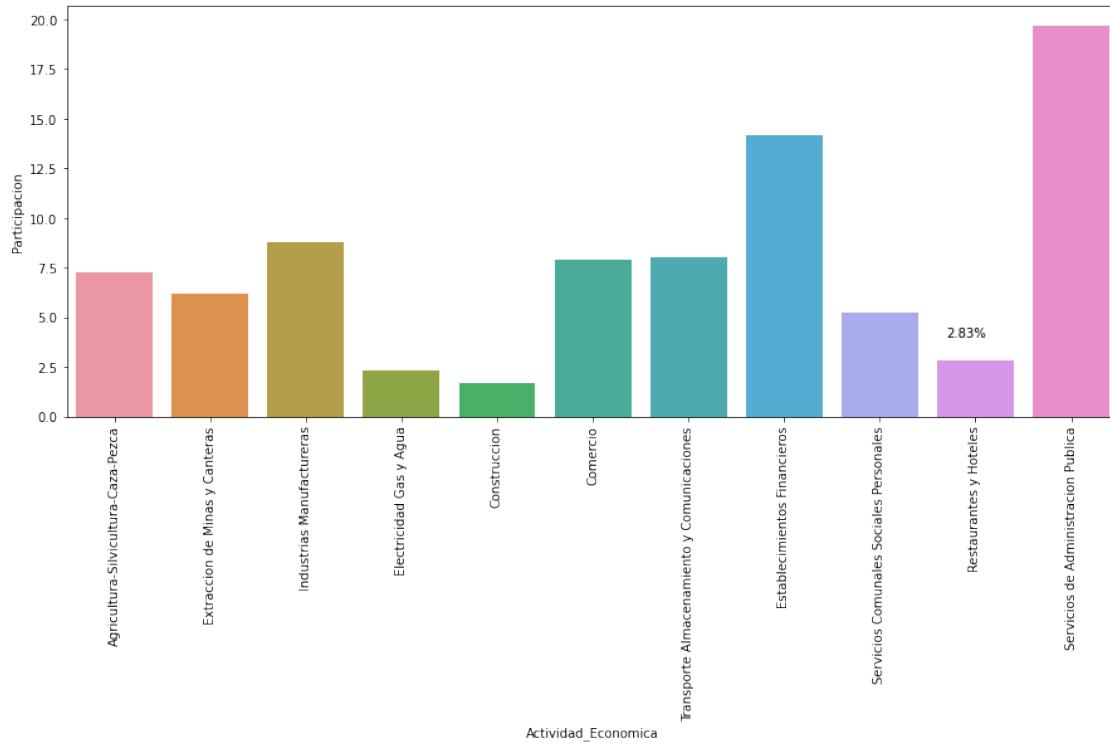
According to this plot, the cities of Santa Cruz and La Paz have the most businesses.

Now let's look at the comparison of productive sectors within the city of La Paz

```
[49]: plt.figure(figsize=(15,6))  
plt.xticks(rotation=90)
```

```
plt.text(8.7,4, str(growing.loc[9,"Participacion"])+"%")
sns.barplot(x="Actividad_Economica", y="Participacion", data=growing)
```

[49]: <AxesSubplot:xlabel='Actividad_Economica', ylabel='Participacion'>

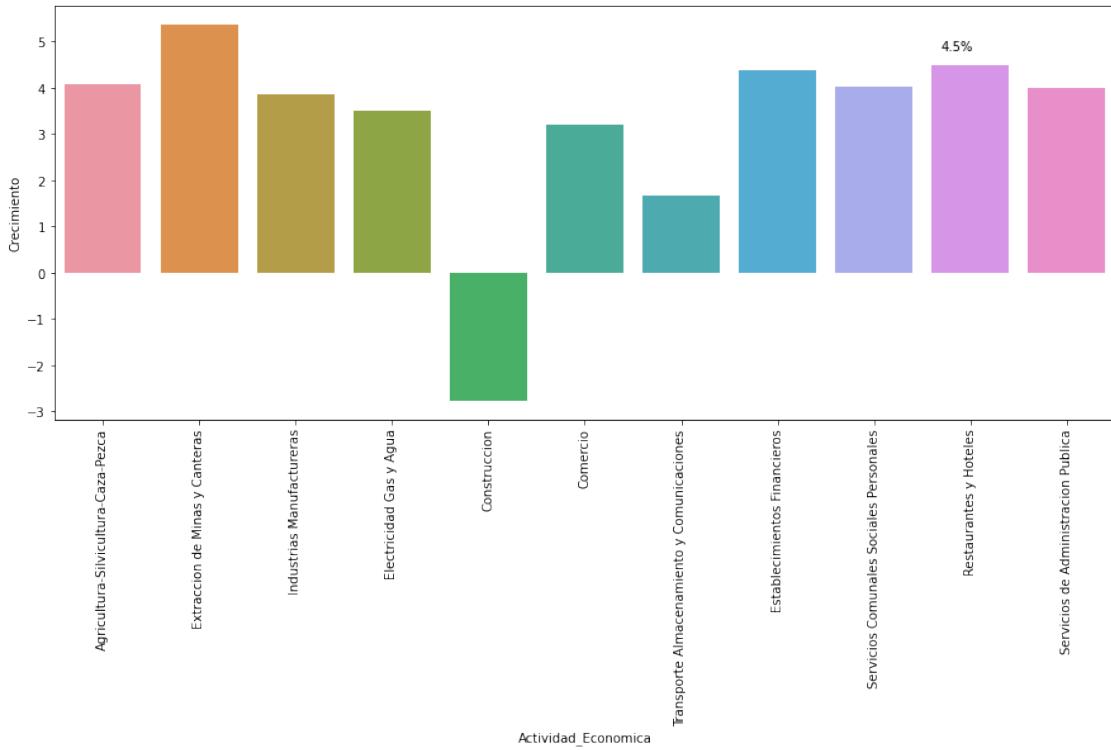


According to the data, the restaurant area has an approximate participation of 2.83% of the market

Now, Let's see the growth of the sector

```
[54]: plt.figure(figsize=(15,6))
plt.xticks(rotation=90)
plt.text(8.7,4.8, str(growing.loc[9,"Crecimiento"])+"%")
sns.barplot(x="Actividad_Economica", y="Crecimiento", data=growing)
```

[54]: <AxesSubplot:xlabel='Actividad_Economica', ylabel='Crecimiento'>

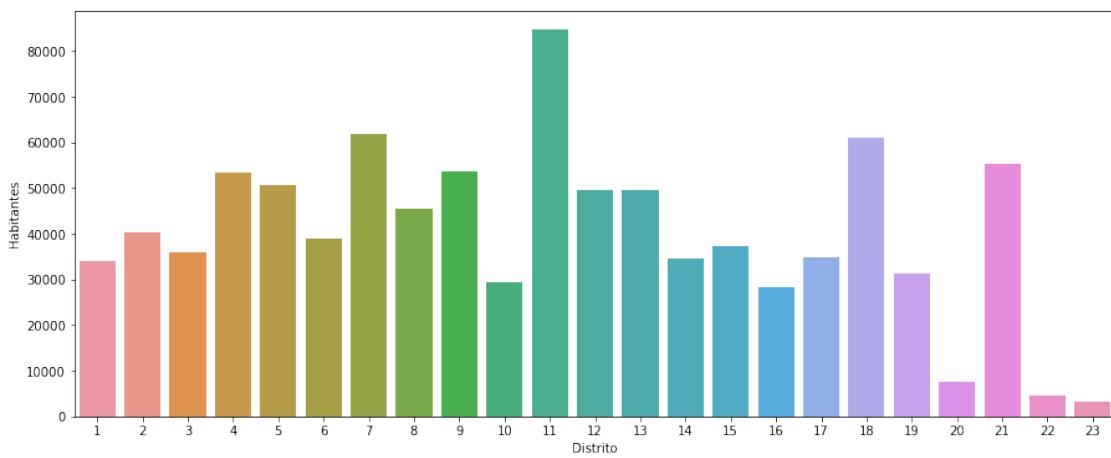


We see that although the market share is small, in growth it is in second place

Now let's focus on the city and its characteristics according to the inhabitants and their districts

```
[59]: plt.figure(figsize=(15,6))
sns.barplot(x="Distrito", y="Habitantes", data=population)
```

```
[59]: <AxesSubplot:xlabel='Distrito', ylabel='Habitantes'>
```



```
[68]: df2=population[["Distrito","Habitantes"]]
df2.head()
```

```
[68]:   Distrito  Habitantes
0          3      35944
1          4      53461
2          5      50716
3          6      38916
4          7      61887
```

```
[70]: union= pd.merge(coordinates, df2, on="Distrito")
union.head()
```

```
[70]:   Distrito Macrodistrito  Latitude  Longitude  Habitantes
0          1        Centro -16.496946 -68.133407      33889
1          2        Centro -16.499426 -68.122380      40396
2          3     Cotahuma -16.514952 -68.129473      35944
3          4     Cotahuma -16.537604 -68.135559      53461
4          5     Cotahuma -16.494808 -68.151444      50716
```

```
[108]: LaPaz_data["Distrito"] = LaPaz_data["Distrito"].astype(str)
```

```
[110]: LaPaz_data.dtypes
```

```
[110]: Distrito          object
Macrodistrito      object
Latitude         float64
Longitude         float64
Habitantes       int64
dtype: object
```

```
[131]: LaPaz_data["Nombre"] = "Macrodistrito " + LaPaz_data["Macrodistrito"] + ", Distrito"
       ↪ "+LaPaz_data["Distrito"]
LaPaz_data.head()
```

```
[131]:   Distrito Macrodistrito  Latitude  Longitude  Habitantes \
0          1        Centro -16.496946 -68.133407      33889
1          2        Centro -16.499426 -68.122380      40396
2          3     Cotahuma -16.514952 -68.129473      35944
3          4     Cotahuma -16.537604 -68.135559      53461
4          5     Cotahuma -16.494808 -68.151444      50716

                           Nombre
0  Macrodistrito Centro, Distrito 1
1  Macrodistrito Centro, Distrito 2
2  Macrodistrito Cotahuma, Distrito 3
3  Macrodistrito Cotahuma, Distrito 4
```

4 Macrodistrito Cotahuma, Distrito 5

```
[129]: #LaPaz_data.drop(['Nombre'], axis='columns', inplace=True)  
#LaPaz_data.head()
```

0.4 PLOTTING DATA ON THE MAP USING FOLIUM

```
[115]: address = 'La Paz, Bolivia'  
  
geolocator = Nominatim(user_agent="ny_explorer")  
location = geolocator.geocode(address)  
latitude = location.latitude  
longitude = location.longitude  
print('The geographical coordinate of La Paz are {}, {}'.format(latitude, longitude))
```

The geographical coordinate of La Paz are -16.4955455, -68.1336229.

```
[132]: # create map of La Paz using latitude and longitude values  
map_LaPaz = folium.Map(location=[latitude, longitude], zoom_start=12)  
  
# add markers to map  
for lat, lng, label in zip(LaPaz_data['Latitude'],  
                           LaPaz_data['Longitude'], LaPaz_data['Nombre']+" "+Habitantes:  
                           "+LaPaz_data["Habitantes"].astype(str)):  
    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_LaPaz)  
  
map_LaPaz
```

```
[132]: <folium.folium.Map at 0x7fab04a3fbe0>
```

0.5 FINDING PLACES

```
[133]: CLIENT_ID = '1AQJMCFUOPJAS5JYZRTRGOKWGXPEP5CUL1GRUKYS2JXDU41' # your  
       ↪Foursquare ID  
CLIENT_SECRET = '2ZAKMBIETWNQXTYZCKRZF10ZF4L01EDTZUTSEV5PZF34WFNU' # your  
       ↪Foursquare Secret  
VERSION = '20180605' # Foursquare API version
```

```

LIMIT = 100 # A default Foursquare API limit value

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

```

Your credentails:

```

CLIENT_ID: 1AQJMFUOPJAS5JYZRTRGOKWXPEP5CUL1GRUKYS2JXDU41
CLIENT_SECRET:2ZAKMBIETWNQXTYZCKRZFIOZF4L01EDTZUTSEV5PZF34WFNU

```

[134]: LaPaz_data.loc[0, 'Nombre']

[134]: 'Macrodistrito Centro, Distrito 1'

```

[136]: neighborhood_latitude = LaPaz_data.loc[0, 'Latitude'] # neighborhood latitude
        ↵value
neighborhood_longitude = LaPaz_data.loc[0, 'Longitude'] # neighborhood
        ↵longitude value

neighborhood_name = LaPaz_data.loc[0, 'Nombre'] # neighborhood name

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

```

Latitude and longitude values of Macrodistrito Centro, Distrito 1 are
-16.496945999999998, -68.13340699999999.

[150]: # type your answer here

```

LIMIT = 100 # limit of number of venues returned by Foursquare API
radius = 500 # define radius
url = 'https://api.foursquare.com/v2/venues/search?
        ↵categoryId=4d4b7105d754a06374d81259&client_id={}
        ↵&client_secret={}
        ↵&v={}
        ↵&ll={}
        ↵,&radius={}
        ↵&LIMIT)
        ↵format(
            ↵CLIENT_ID,
            ↵CLIENT_SECRET,
            ↵VERSION,
            ↵neighborhood_latitude,
            ↵neighborhood_longitude,
            ↵radius,
            ↵LIMIT)

```

[151]: import requests # library to handle requests

```

from pandas.io.json import json_normalize # transform JSON file into a pandas DataFrame
import requests
url = "https://api.yelp.com/v3/businesses/search?term=coffee&location=Lima, Peru&sort_by=relevance&limit=100"
headers = {"Authorization": "Bearer " + yelp_token}
response = requests.get(url, headers=headers)
results = response.json()
print(json.dumps(results, indent=2))

```

[152]: results = requests.get(url).json()

[153]: results

```

[153]: {'meta': {'code': 200, 'requestId': '5f8ceff10572497850ec1f2a'},
  'response': {'venues': [{"id": "5b6b5057a9e402002caff46b",
    'name': 'Geisha Coffe House',
    'location': {'lat': -16.495633,
      'lng': -68.133172,
      'labeledLatLngs': [{"label": "display",
        'lat': -16.495633,
        'lng': -68.133172}],
      'distance': 148,
      'cc': 'BO',
      'city': 'La Paz',
      'state': 'La Paz',
      'country': 'Bolivia',
      'formattedAddress': ['La Paz', 'Bolivia']},
    'categories': [{"id": "4bf58dd8d48988d1e0931735",
      'name': 'Coffee Shop',
      'pluralName': 'Coffee Shops',
      'shortName': 'Coffee Shop',
      'icon': {'prefix':
        'https://ss3.4sqi.net/img/categories_v2/food/coffeeshop_',
        'suffix': '.png'},
      'primary': True}],
    'referralId': 'v-1603071985',
    'hasPerk': False},
    {'id': '50f02696e4b0cd11854e7257',
      'name': 'Tomate Café',
      'location': {'address': 'Ayacucho',
        'crossStreet': 'Potosí',
        'lat': -16.49705930045442,
        'lng': -68.13393939923414,
        'labeledLatLngs': [{"label": "display",
          'lat': -16.49705930045442,
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{'id': '58af6e869dc8d02dc6ad4e9f',
    'name': 'Delhi Curry Lounge',
    'location': {'address': 'Murillo 993',
        'crossStreet': 'Cochabamba',
        'lat': -16.497768,
        'lng': -68.13704,
        'labeledLatLngs': [ {'label': 'display',
            'lat': -16.497768,
            'lng': -68.13704} ]}}

```

```

'lat': -16.497768,
'lng': -68.13704}],
'distance': 398,
'cc': 'BO',
'city': 'La Paz',
'state': 'La Paz',
'country': 'Bolivia',
'formattedAddress': ['Murillo 993 (Cochabamba)', 'La Paz', 'Bolivia']],
'categories': [{}{'id': '4bf58dd8d48988d10f941735',
  'name': 'Indian Restaurant',
  'pluralName': 'Indian Restaurants',
  'shortName': 'Indian',
  'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/indian_',
    'suffix': '.png'},
  'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '4f37f825e4b0fc67a9c6e622',
  'name': 'Ayala',
  'location': {'lat': -16.49772,
    'lng': -68.136582,
    'labeledLatLngs': [{}{'label': 'display',
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      'lng': -68.136582}]},
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  'state': 'La Paz',
  'country': 'Bolivia',
  'formattedAddress': ['La Paz', 'Bolivia']],
  'categories': [{}{'id': '4bf58dd8d48988d1c4941735',
    'name': 'Restaurant',
    'pluralName': 'Restaurants',
    'shortName': 'Restaurant',
    'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/default_',
      'suffix': '.png'},
    'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '4e0b6784a8097aad936e6073',
  'name': 'Pollo Frito Cochabamba',
  'location': {'address': 'Av. 16 de Julio No. 1420',
    'lat': -16.50090394163535,
    'lng': -68.13360214233398,
    'labeledLatLngs': [{}{'label': 'display',
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      'lng': -68.13360214233398}]},
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  'country': 'Bolivia',
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    'shortName': 'Indian',
    'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/indian_',
      'suffix': '.png'},
    'primary': True}]}

```

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  pluralName: 'Fast Food Restaurants',
  shortName: 'Fast Food',
  icon: {'prefix':
    'https://ss3.4sqi.net/img/categories_v2/food/fastfood_',
    'suffix': '.png'},
  primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '5662eee3498e2afbdbb483c0',
  name: 'Cafe La Chola',
  location: {lat: -16.494976043701172,
  lng: -68.13641357421875,
  labeledLatLngs: [{label: 'display',
    lat: -16.494976043701172,
    lng: -68.13641357421875}],
  distance: 388,
  cc: 'B0',
  city: 'La Paz',
  state: 'La Paz',
  country: 'Bolivia',
  formattedAddress: ['La Paz', 'Bolivia']},
  categories: [{id: '4bf58dd8d48988d16a941735',
    name: 'Bakery',
    pluralName: 'Bakeries',
    shortName: 'Bakery',
    icon: {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/bakery_',
      'suffix': '.png'},
    primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '4d0cde647d28721e1c78f520',
  name: 'Brosso',
  location: {address: 'Av. 16 de julio (El Prado) #1473',
  lat: -16.500951378128992,
  lng: -68.13308004977695,
  labeledLatLngs: [{label: 'display',
    lat: -16.500951378128992,
    lng: -68.13308004977695}],
  distance: 447,

```

```

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    'Bolivia']],
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    pluralName: 'Ice Cream Shops',
    shortName: 'Ice Cream',
    icon: {'prefix':
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        'suffix': '.png'},
    primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '4ee7cfa3722e4c7e7133aeb0',
    name: 'Cafe Del Mundo',
    location: {'lat': -16.49756954789014,
        'lng': -68.13861802176106,
        labeledLatLngs: [{label: 'display',
            lat: -16.49756954789014,
            lng: -68.13861802176106}],
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    cc: 'BO',
    city: 'La Paz',
    state: 'La Paz',
    country: 'Bolivia',
    formattedAddress: ['La Paz', 'Bolivia']],
'categories': [{id: '4bf58dd8d48988d16d941735',
    name: 'Café',
    pluralName: 'Cafés',
    shortName: 'Café',
    icon: {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/cafe_',
        'suffix': '.png'},
    primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '4db774a693a096e4f5e1d79f',
    name: "Manolo's",
    location: {'address': 'Av Camacho',
        crossStreet: 'Ayacucho',
        lat: -16.49875184272793,
        lng: -68.13474286741274,
        labeledLatLngs: [{label: 'display',
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            lng: -68.13474286741274}]}]
```

```

'lng': -68.13474286741274}],
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  pluralName: 'Restaurants',
  shortName: 'Restaurant',
  icon: {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/default_',
    'suffix': '.png'},
  primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '52d2b9d211d24756f200be5e',
  name: 'Capitol - Confiteria Restaurant',
  location: {'lat': -16.495695114135742,
    'lng': -68.13497924804688,
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    'country': 'Bolivia',
    'formattedAddress': ['Bolivia']},
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    name: 'Tea Room',
    pluralName: 'Tea Rooms',
    shortName: 'Tea Room',
    icon: {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/tearoom_',
      'suffix': '.png'},
    primary: True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '551ad263498e3548b3ae9b55',
  name: 'Licius Way',
  location: {'address': 'Calle Potosí, Edificio Max Salzmann No. 1321',
    'lat': -16.497517126053356,
    'lng': -68.13290886416624,
    'labeledLatLngs': [{'label': 'display',
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      'lng': -68.13290886416624}],
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    'cc': 'BO',
    'city': 'La Paz',
    'state': 'La Paz',
    'country': 'Bolivia'}
}

```

```

'state': 'La Paz',
'country': 'Bolivia',
'formattedAddress': ['Calle Potosí, Edificio Max Salzmann No. 1321',
 'La Paz',
 'Bolivia']],
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 'pluralName': 'Salad Places',
 'shortName': 'Salad',
 'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/salad_',
 'suffix': '.png'},
 'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '56b504d138fac4ce2c89a59d',
 'name': 'El Cofre De Los Andes',
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 'lat': -16.501423,
 'lng': -68.13422,
 'labeledLatLngs': [{}{'label': 'display',
 'lat': -16.501423,
 'lng': -68.13422}],
 'distance': 505,
 'cc': 'BO',
 'city': 'La Paz',
 'state': 'La Paz',
 'country': 'Bolivia',
 'formattedAddress': ['Avenida Mariscal Santa Cruz', 'La Paz', 'Bolivia']},
 'categories': [{}{'id': '4bf58dd8d48988d1c4941735',
 'name': 'Restaurant',
 'pluralName': 'Restaurants',
 'shortName': 'Restaurant',
 'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/default_',
 'suffix': '.png'},
 'primary': True}],
 'referralId': 'v-1603071986',
 'hasPerk': False},
 {'id': '531bc26c498e9762b7f59ddc',
 'name': "Wist'upiku",
 'location': {'address': 'Av. Satélite',
 'lat': -16.495056401683705,
 'lng': -68.13471375624442,
 'labeledLatLngs': [{}{'label': 'display',
 'lat': -16.495056401683705,
 'lng': -68.13471375624442}],
 'distance': 252,
 'cc': 'BO',
 'city': 'La Paz',
 'state': 'La Paz',
 'country': 'Bolivia',
 'formattedAddress': ['Av. Satélite', 'La Paz', 'Bolivia']}]}

```

```

'city': 'La Paz',
'state': 'La Paz',
'country': 'Bolivia',
'formattedAddress': ['Av. Satélite', 'La Paz', 'Bolivia']},
'categories': [{id: '4bf58dd8d48988d143941735',
  name: 'Breakfast Spot',
  pluralName: 'Breakfast Spots',
  shortName: 'Breakfast',
  icon: {'prefix':
    'https://ss3.4sqi.net/img/categories_v2/food/breakfast_',
    'suffix': '.png'},
  primary}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '50f30e51e4b050bf9c36a0f9',
  name: "Pepe's Cafe",
  location: {'address': 'Jiminez 894',
    'crossStreet': 'Linares',
    'lat': -16.496855034112436,
    'lng': -68.13724642857068,
    'labeledLatLngs': [{'label': 'display',
      'lat': -16.496855034112436,
      'lng': -68.13724642857068}],
    'distance': 409,
    'cc': 'BO',
    'city': 'La Paz',
    'state': 'La Paz',
    'country': 'Bolivia',
    'formattedAddress': ['Jiminez 894 (Linares)', 'La Paz', 'Bolivia']},
  'categories': [{id: '4bf58dd8d48988d16d941735',
    name: 'Café',
    pluralName: 'Cafés',
    shortName: 'Café',
    icon: {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/cafe_',
      'suffix': '.png'},
    primary}],
  'referralId': 'v-1603071986',
  'hasPerk': False},
{id: '53bde5db498e246c7d01b88c',
  name: 'Milanesa FC',
  location: {'lat': -16.496551513671875,
    'lng': -68.1343765258789,
    'labeledLatLngs': [{'label': 'display',
      'lat': -16.496551513671875,
      'lng': -68.1343765258789}],
    'distance': 112,
    'cc': 'BO',

```

```

'country': 'Bolivia',
'formattedAddress': ['Bolivia']],
'categories': [{}{'id': '4bf58dd8d48988d16e941735',
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  'pluralName': 'Fast Food Restaurants',
  'shortName': 'Fast Food',
  'icon': {'prefix':
    'https://ss3.4sqi.net/img/categories_v2/food/fastfood_',
    'suffix': '.png'},
  'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '50a4f32fe4b0765db337a3b5',
  'name': 'Restorante Bella Vista',
  'location': {'lat': -16.495665407164484,
    'lng': -68.13627411512401,
    'labeledLatLngs': [{}{'label': 'display',
      'lat': -16.495665407164484,
      'lng': -68.13627411512401}],
    'distance': 337,
    'cc': 'BO',
    'city': 'La Paz',
    'state': 'La Paz',
    'country': 'Bolivia',
    'formattedAddress': ['La Paz', 'Bolivia']},
  'categories': [{}{'id': '4bf58dd8d48988d1c4941735',
    'name': 'Restaurant',
    'pluralName': 'Restaurants',
    'shortName': 'Restaurant',
    'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/default_',
      'suffix': '.png'},
    'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '4fb53d7de4b023886a7d0efc',
  'name': 'Del Sur',
  'location': {'lat': -16.499107360839844,
    'lng': -68.1332015991211,
    'labeledLatLngs': [{}{'label': 'display',
      'lat': -16.499107360839844,
      'lng': -68.1332015991211}],
    'distance': 241,
    'cc': 'BO',
    'country': 'Bolivia',
    'formattedAddress': ['Bolivia']},
  'categories': [{}{'id': '4bf58dd8d48988d1be941735',
    'name': 'Latin American Restaurant',

```

```

'pluralName': 'Latin American Restaurants',
'shortName': 'Latin American',
'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/latinamerican_',
'suffix': '.png'},
'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '532f4ad1498e281e3971142a',
'name': 'Presto Pizza',
'location': {'address': 'Calle Junin frente a la UTOP',
'lat': -16.494809483123326,
'lng': -68.13314757565864,
'labeledLatLngs': [ {'label': 'display',
'lat': -16.494809483123326,
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'distance': 239,
'cc': 'BO',
'city': 'La Paz',
'state': 'La Paz',
'country': 'Bolivia',
'formattedAddress': ['Calle Junin frente a la UTOP',
'La Paz',
'Bolivia'] },
'categories': [ {'id': '4bf58dd8d48988d1ca941735',
'name': 'Pizza Place',
'pluralName': 'Pizza Places',
'shortName': 'Pizza',
'icon': {'prefix': 'https://ss3.4sqi.net/img/categories_v2/food/pizza_',
'suffix': '.png'},
'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '5657b68b498e715f6028b630',
'name': '"Snack" – Adrianita',
'location': {'address': 'Tarija',
'crossStreet': 'Linares',
'lat': -16.498628616333008,
'lng': -68.13746643066406,
'labeledLatLngs': [ {'label': 'display',
'lat': -16.498628616333008,
'lng': -68.13746643066406} ] ,
'distance': 472,
'cc': 'BO',
'city': 'La Paz',
'state': 'La Paz',
'country': 'Bolivia',

```

```

'formattedAddress': ['Tarija (Linares)', 'La Paz', 'Bolivia']},
'categories': [{id: '4bf58dd8d48988d1cd941735',
  'name': 'South American Restaurant',
  'pluralName': 'South American Restaurants',
  'shortName': 'South American',
  'icon': {'prefix':
  'https://ss3.4sqi.net/img/categories_v2/food/argentinian_',
    'suffix': '.png'},
  'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '5145e878e4b0dba1b5edd935',
  'name': 'Pollos Dona Betty',
  'location': {'lat': -16.49684,
    'lng': -68.12904,
    'labeledLatLngs': [{'label': 'display',
      'lat': -16.49684,
      'lng': -68.12904}]},
  'distance': 466,
  'cc': 'BO',
  'country': 'Bolivia',
  'formattedAddress': ['Bolivia']},
'categories': [{id: '4d4ae6fc7a7b7dea34424761',
  'name': 'Fried Chicken Joint',
  'pluralName': 'Fried Chicken Joints',
  'shortName': 'Fried Chicken',
  'icon': {'prefix':
  'https://ss3.4sqi.net/img/categories_v2/food/friedchicken_',
    'suffix': '.png'},
  'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{id: '50f05374e4b005218be75dd5',
  'name': 'Palacio Del Pollo',
  'location': {'lat': -16.499137,
    'lng': -68.137176,
    'labeledLatLngs': [{'label': 'display',
      'lat': -16.499137,
      'lng': -68.137176}]},
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  'city': 'La Paz',
  'state': 'La Paz',
  'country': 'Bolivia',
  'formattedAddress': ['La Paz', 'Bolivia']},
'categories': [{id: '4bf58dd8d48988d1be941735',
  'name': 'Latin American Restaurant',

```

```

'pluralName': 'Latin American Restaurants',
'shortName': 'Latin American',
'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/latinamerican_',
'suffix': '.png'},
'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '520f835611d201a45e6861c4',
'name': 'Nelly',
'location': {'address': 'Mercado Lanza',
'crossStreet': 'Evaristo Vallé',
'lat': -16.49417,
'lng': -68.137338,
'labeledLatLngs': [{'label': 'display',
'lat': -16.49417,
'lng': -68.137338}],
'distance': 521,
'cc': 'BO',
'city': 'La Paz',
'state': 'La Paz',
'country': 'Bolivia',
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'La Paz',
'Bolivia']},
'categories': [{'id': '4bf58dd8d48988d143941735',
'name': 'Breakfast Spot',
'pluralName': 'Breakfast Spots',
'shortName': 'Breakfast',
'icon': {'prefix':
'https://ss3.4sqi.net/img/categories_v2/food/breakfast_',
'suffix': '.png'},
'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '4f57bbdae4b0ffe1984fd0dc',
'name': 'A Todo Chancho',
'location': {'address': 'Zona Central',
'crossStreet': 'Av. 16 de Julio',
'lat': -16.502043,
'lng': -68.132143,
'labeledLatLngs': [{'label': 'display',
'lat': -16.502043,
'lng': -68.132143}],
'distance': 583,
'cc': 'BO',
'city': 'La Paz',
'country': 'Bolivia',
'formattedAddress': ['A Todo Chancho',
'Zona Central',
'Av. 16 de Julio',
'La Paz',
'Bolivia']}]}

```

```

'state': 'LP',
'country': 'Bolivia',
'formattedAddress': ['Zona Central (Av. 16 de Julio)',
 'La Paz',
 'Bolivia']],
'categories': [{}{'id': '4bf58dd8d48988d16e941735',
 'name': 'Fast Food Restaurant',
 'pluralName': 'Fast Food Restaurants',
 'shortName': 'Fast Food',
 'icon': {'prefix':
 'https://ss3.4sqi.net/img/categories_v2/food/fastfood_',
 'suffix': '.png'},
 'primary': True}],
'referralId': 'v-1603071986',
'hasPerk': False},
{'id': '4eea2a16be7b7263da63f3c9',
 'name': 'La Casona',
 'location': {'address': 'Av. Mariscal Santa Cruz',
 'crossStreet': 'Sagarnaga',
 'lat': -16.496900397534684,
 'lng': -68.13654220167132,
 'labeledLatLngs': [{}{'label': 'display',
 'lat': -16.496900397534684,
 'lng': -68.13654220167132}],
 'distance': 334,
 'cc': 'BO',
 'city': 'La Paz',
 'state': 'La Paz Dept',
 'country': 'Bolivia',
 'formattedAddress': ['Av. Mariscal Santa Cruz (Sagarnaga)',
 'La Paz',
 'Bolivia']},
 'categories': [{}{'id': '4bf58dd8d48988d1cd941735',
 'name': 'South American Restaurant',
 'pluralName': 'South American Restaurants',
 'shortName': 'South American',
 'icon': {'prefix':
 'https://ss3.4sqi.net/img/categories_v2/food/argentinian_',
 'suffix': '.png'},
 'primary': True}],
 'referralId': 'v-1603071986',
 'hasPerk': False}],
 'confident': False}

```

```
[154]: # 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']

```

```
[156]: venues = results['response']['venues']

nearby_venues = json_normalize(venues) # flatten JSON
nearby_venues.head()
```

/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages/ipykernel_launcher.py:3: FutureWarning: pandas.io.json.json_normalize is deprecated, use pandas.json_normalize instead
This is separate from the ipykernel package so we can avoid doing imports until

```
[156]:
```

	id	name \
0	5b6b5057a9e402002caff46b	Geisha Coffe House
1	50f02696e4b0cd11854e7257	Tomate Café
2	4c0afe567e3fc9283aadf482	Burger King
3	58f6ae95237dee43d91f1505	Texas
4	506dcde8e4b0f91938062541	Los lomitos del 6

	categories	referralId	hasPerk \
0	[{'id': '4bf58dd8d48988d1e0931735', 'name': 'C...}	v-1603071985	False
1	[{'id': '4bf58dd8d48988d1d3941735', 'name': 'V...}	v-1603071985	False
2	[{'id': '4bf58dd8d48988d16e941735', 'name': 'F...}	v-1603071985	False
3	[{'id': '4bf58dd8d48988d16e941735', 'name': 'F...}	v-1603071985	False
4	[{'id': '4bf58dd8d48988d107941735', 'name': 'A...}	v-1603071985	False

	location.lat	location.lng \
0	-16.495633	-68.133172
1	-16.497059	-68.133939
2	-16.497095	-68.135071
3	-16.497868	-68.133354
4	-16.496910	-68.134772

	location.labeledLatLngs	location.distance \
0	[{'label': 'display', 'lat': -16.495633, 'lng': ...}	148
1	[{'label': 'display', 'lat': -16.4970593004544...}	58
2	[{'label': 'display', 'lat': -16.4970948085762...}	178
3	[{'label': 'display', 'lat': -16.497868, 'lng': ...}	102
4	[{'label': 'display', 'lat': -16.4969103609642...}	145

```

  location.cc      location.city location.state location.country \
0          BO           La Paz        La Paz       Bolivia
1          BO           La Paz        La Paz       Bolivia
2          BO           La Paz        La Paz       Bolivia
3          BO  Provincia Murillo     La Paz       Bolivia
4          BO           La Paz        La Paz       Bolivia

  location.formattedAddress location.address \
0                               [La Paz, Bolivia]           NaN
1   [Ayacucho (Potosí), La Paz, Bolivia]       Ayacucho
2 [Socabaya 1500 (Entre Potosí y Mercado), La Pa...  Socabaya 1500
3   [Colon (Mercado), La Paz 2174, Bolivia]       Colon
4                               [La Paz, Bolivia]           NaN

  location.crossStreet location.postalCode
0                  NaN           NaN
1            Potosí           NaN
2  Entre Potosí y Mercado           NaN
3            Mercado          2174
4                  NaN           NaN

```

```

[157]: venues = results['response']['venues']

nearby_venues = json_normalize(venues) # flatten JSON

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

# filter the category for each row
nearby_venues['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()

```

```

/home/jupyterlab/conda/envs/python/lib/python3.6/site-
packages/ipykernel_launcher.py:3: FutureWarning: pandas.io.json.json_normalize
is deprecated, use pandas.json_normalize instead
  This is separate from the ipykernel package so we can avoid doing imports
until

```

```

[157]:          name             categories      lat      lng
0  Geisha Coffe House      Coffee Shop -16.495633 -68.133172
1      Tomate Café  Vegetarian / Vegan Restaurant -16.497059 -68.133939

```

```

2      Burger King      Fast Food Restaurant -16.497095 -68.135071
3      Texas            Fast Food Restaurant -16.497868 -68.133354
4  Los lomitos del 6  Argentinian Restaurant -16.496910 -68.134772

```

```
[158]: print('{} venues were returned by Foursquare.'.format(nearby_venues.shape[0]))
```

47 venues were returned by Foursquare.

```
[159]: 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/search?
→categoryId=4d4b7105d754a06374d81259&client_id={}&client_secret={}
&v={}&ll={},{}&radius={}&limit={}&format='
format(
    CLIENT_ID,
    CLIENT_SECRET,
    VERSION,
    lat,
    lng,
    radius,
    LIMIT)

# make the GET request
results = requests.get(url).json()['response']['venues']

# return only relevant information for each nearby venue
venues_list.append([
    name,
    lat,
    lng,
    v['name'],
    v['location']['lat'],
    v['location']['lng'],
    v['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 = ['Nombre',
                        'Neighborhood Latitude',
                        'Neighborhood Longitude',
                        'Venue',
                        'Venue Latitude',
                        'Venue Longitude',

```

```
'Venue Category']
```

```
return(nearby_venues)
```

```
[160]: # type your answer here
```

```
LaPaz_venues = getNearbyVenues(names=LaPaz_data['Nombre'],  
                                latitudes=LaPaz_data['Latitude'],  
                                longitudes=LaPaz_data['Longitude'])  
)
```

```
Macrodistrito Centro, Distrito 1  
Macrodistrito Centro, Distrito 2  
Macrodistrito Cotahuma, Distrito 3  
Macrodistrito Cotahuma, Distrito 4  
Macrodistrito Cotahuma, Distrito 5  
Macrodistrito Cotahuma, Distrito 6  
Macrodistrito Max Paredes, Distrito 7  
Macrodistrito Max Paredes, Distrito 8  
Macrodistrito Max Paredes, Distrito 9  
Macrodistrito Max Paredes, Distrito 10  
Macrodistrito Periférica, Distrito 11  
Macrodistrito Periférica, Distrito 12  
Macrodistrito Periférica, Distrito 13  
Macrodistrito San Antonio, Distrito 14  
Macrodistrito San Antonio, Distrito 15  
Macrodistrito San Antonio, Distrito 16  
Macrodistrito San Antonio, Distrito 17  
Macrodistrito Sur, Distrito 18  
Macrodistrito Sur, Distrito 19  
Macrodistrito Mallasa, Distrito 20  
Macrodistrito Sur, Distrito 21  
Macrodistrito Hampaturi, Distrito 22  
Macrodistrito Zongo, Distrito 23
```

```
[161]: print(LaPaz_venues.shape)
```

```
LaPaz_venues.head()
```

```
(305, 7)
```

```
[161]:
```

```
Nombre Neighborhood Latitude \
```

```
0 Macrodistrito Centro, Distrito 1 -16.496946  
1 Macrodistrito Centro, Distrito 1 -16.496946  
2 Macrodistrito Centro, Distrito 1 -16.496946  
3 Macrodistrito Centro, Distrito 1 -16.496946  
4 Macrodistrito Centro, Distrito 1 -16.496946
```

```
Neighborhood Longitude
```

```
Venue Venue Latitude \
```

```

0      -68.133407  Geisha Coffe House      -16.495633
1      -68.133407          Tomate Café      -16.497059
2      -68.133407        Burger King      -16.497095
3      -68.133407           Texas      -16.497868
4      -68.133407  Los lomitos del 6      -16.496910

```

	Venue	Longitude	Venue Category
0	-68.133172		Coffee Shop
1	-68.133939	Vegetarian / Vegan Restaurant	
2	-68.135071	Fast Food Restaurant	
3	-68.133354	Fast Food Restaurant	
4	-68.134772	Argentinian Restaurant	

```
[162]: LaPaz_venues.groupby('Nombre').count()
```

Nombre	Neighborhood	Latitude	\
Macrodistrito Centro, Distrito 1		47	
Macrodistrito Centro, Distrito 2		49	
Macrodistrito Cotahuma, Distrito 3		46	
Macrodistrito Cotahuma, Distrito 5		11	
Macrodistrito Cotahuma, Distrito 6		47	
Macrodistrito Max Paredes, Distrito 8		8	
Macrodistrito Max Paredes, Distrito 9		1	
Macrodistrito San Antonio, Distrito 14		1	
Macrodistrito San Antonio, Distrito 15		6	
Macrodistrito San Antonio, Distrito 16		1	
Macrodistrito Sur, Distrito 18		49	
Macrodistrito Sur, Distrito 21		39	

Nombre	Neighborhood	Longitude	Venue	\
Macrodistrito Centro, Distrito 1		47	47	
Macrodistrito Centro, Distrito 2		49	49	
Macrodistrito Cotahuma, Distrito 3		46	46	
Macrodistrito Cotahuma, Distrito 5		11	11	
Macrodistrito Cotahuma, Distrito 6		47	47	
Macrodistrito Max Paredes, Distrito 8		8	8	
Macrodistrito Max Paredes, Distrito 9		1	1	
Macrodistrito San Antonio, Distrito 14		1	1	
Macrodistrito San Antonio, Distrito 15		6	6	
Macrodistrito San Antonio, Distrito 16		1	1	
Macrodistrito Sur, Distrito 18		49	49	
Macrodistrito Sur, Distrito 21		39	39	

Nombre	Venue	Latitude	Venue Longitude	\
Macrodistrito Centro, Distrito 1	-68.133407	-16.495633		
Macrodistrito Centro, Distrito 2	-68.133407	-16.497059		
Macrodistrito Cotahuma, Distrito 3	-68.133407	-16.497095		
Macrodistrito Cotahuma, Distrito 5	-68.133407	-16.497868		
Macrodistrito Cotahuma, Distrito 6	-68.133407	-16.496910		
Macrodistrito Max Paredes, Distrito 8	-68.133172	-16.495633		
Macrodistrito Max Paredes, Distrito 9	-68.133939	-16.497059		
Macrodistrito San Antonio, Distrito 14	-68.135071	-16.497095		
Macrodistrito San Antonio, Distrito 15	-68.133354	-16.497868		
Macrodistrito San Antonio, Distrito 16	-68.134772	-16.496910		
Macrodistrito Sur, Distrito 18	-68.133407	-16.495633		
Macrodistrito Sur, Distrito 21	-68.133407	-16.497059		

Macrodistrito Centro, Distrito 1	47	47
Macrodistrito Centro, Distrito 2	49	49
Macrodistrito Cotahuma, Distrito 3	46	46
Macrodistrito Cotahuma, Distrito 5	11	11
Macrodistrito Cotahuma, Distrito 6	47	47
Macrodistrito Max Paredes, Distrito 8	8	8
Macrodistrito Max Paredes, Distrito 9	1	1
Macrodistrito San Antonio, Distrito 14	1	1
Macrodistrito San Antonio, Distrito 15	6	6
Macrodistrito San Antonio, Distrito 16	1	1
Macrodistrito Sur, Distrito 18	49	49
Macrodistrito Sur, Distrito 21	39	39

	Venue Category
Nombre	
Macrodistrito Centro, Distrito 1	47
Macrodistrito Centro, Distrito 2	49
Macrodistrito Cotahuma, Distrito 3	46
Macrodistrito Cotahuma, Distrito 5	11
Macrodistrito Cotahuma, Distrito 6	47
Macrodistrito Max Paredes, Distrito 8	8
Macrodistrito Max Paredes, Distrito 9	1
Macrodistrito San Antonio, Distrito 14	1
Macrodistrito San Antonio, Distrito 15	6
Macrodistrito San Antonio, Distrito 16	1
Macrodistrito Sur, Distrito 18	49
Macrodistrito Sur, Distrito 21	39

```
[163]: print('There are {} uniques categories.'.format(len(LaPaz_venues['Venue ↴Category'].unique())))

```

There are 52 uniques categories.

```
[164]: # one hot encoding
LaPaz_onehot = pd.get_dummies(LaPaz_venues[['Venue Category']], prefix="", ↴prefix_sep="")

# add neighborhood column back to dataframe
LaPaz_onehot['Nombre'] = LaPaz_venues['Nombre']

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

LaPaz_onehot.head()
```

```
[164]:
```

	Nombre	Argentinian Restaurant	Asian Restaurant	\
0	Macrodistrito Centro, Distrito 1	0	0	
1	Macrodistrito Centro, Distrito 1	0	0	
2	Macrodistrito Centro, Distrito 1	0	0	
3	Macrodistrito Centro, Distrito 1	0	0	
4	Macrodistrito Centro, Distrito 1	1	0	

	BBQ Joint	Bakery	Brazilian Restaurant	Breakfast Spot	Burger Joint	\
0	0	0	0	0	0	
1	0	0	0	0	0	
2	0	0	0	0	0	
3	0	0	0	0	0	
4	0	0	0	0	0	

	Cafeteria	Café	...	Snack Place	Soup Place	South American Restaurant	\
0	0	0	...	0	0	0	
1	0	0	...	0	0	0	
2	0	0	...	0	0	0	
3	0	0	...	0	0	0	
4	0	0	...	0	0	0	

	Steakhouse	Sushi Restaurant	Taco Place	Tea Room	\
0	0	0	0	0	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	

	Vegetarian / Vegan Restaurant	Vietnamese Restaurant	Wings Joint	
0	0	0	0	
1	1	0	0	
2	0	0	0	
3	0	0	0	
4	0	0	0	

[5 rows x 53 columns]

```
[165]: LaPaz_onehot.shape
```

```
[165]: (305, 53)
```

```
[166]: LaPaz_grouped = LaPaz_onehot.groupby('Nombre').mean().reset_index()
LaPaz_grouped
```

```
[166]:
```

	Nombre	Argentinian Restaurant	\
0	Macrodistrito Centro, Distrito 1	0.021277	
1	Macrodistrito Centro, Distrito 2	0.000000	

2	Macrodistrito Cotahuma, Distrito 3	0.000000
3	Macrodistrito Cotahuma, Distrito 5	0.000000
4	Macrodistrito Cotahuma, Distrito 6	0.000000
5	Macrodistrito Max Paredes, Distrito 8	0.000000
6	Macrodistrito Max Paredes, Distrito 9	0.000000
7	Macrodistrito San Antonio, Distrito 14	0.000000
8	Macrodistrito San Antonio, Distrito 15	0.000000
9	Macrodistrito San Antonio, Distrito 16	0.000000
10	Macrodistrito Sur, Distrito 18	0.000000
11	Macrodistrito Sur, Distrito 21	0.000000

	Asian Restaurant	BBQ Joint	Bakery	Brazilian Restaurant	\
0	0.000000	0.000000	0.042553	0.000000	
1	0.000000	0.102041	0.040816	0.040816	
2	0.000000	0.065217	0.043478	0.000000	
3	0.000000	0.000000	0.000000	0.000000	
4	0.021277	0.106383	0.021277	0.000000	
5	0.000000	0.000000	0.000000	0.000000	
6	0.000000	0.000000	0.000000	0.000000	
7	0.000000	0.000000	0.000000	0.000000	
8	0.000000	0.166667	0.000000	0.000000	
9	0.000000	0.000000	0.000000	0.000000	
10	0.000000	0.081633	0.102041	0.000000	
11	0.000000	0.051282	0.051282	0.000000	

	Breakfast Spot	Burger Joint	Cafeteria	Café	...	Snack Place	\
0	0.042553	0.000000	0.000000	0.042553	...	0.000000	
1	0.020408	0.040816	0.020408	0.020408	...	0.020408	
2	0.043478	0.021739	0.000000	0.065217	...	0.000000	
3	0.090909	0.090909	0.000000	0.000000	...	0.000000	
4	0.042553	0.000000	0.000000	0.063830	...	0.000000	
5	0.125000	0.125000	0.000000	0.000000	...	0.000000	
6	0.000000	0.000000	0.000000	0.000000	...	0.000000	
7	0.000000	0.000000	0.000000	0.000000	...	0.000000	
8	0.000000	0.000000	0.000000	0.000000	...	0.166667	
9	0.000000	0.000000	0.000000	0.000000	...	0.000000	
10	0.000000	0.040816	0.000000	0.000000	...	0.000000	
11	0.025641	0.282051	0.000000	0.000000	...	0.000000	

	Soup Place	South American Restaurant	Steakhouse	Sushi Restaurant	\
0	0.000000	0.063830	0.021277	0.000000	
1	0.000000	0.061224	0.000000	0.000000	
2	0.021739	0.021739	0.043478	0.021739	
3	0.090909	0.000000	0.000000	0.000000	
4	0.000000	0.000000	0.000000	0.000000	
5	0.125000	0.000000	0.000000	0.000000	
6	0.000000	0.000000	0.000000	0.000000	

```

7      0.000000          0.000000          0.000000          0.000000
8      0.000000          0.000000          0.000000          0.000000
9      0.000000          0.000000          0.000000          0.000000
10     0.000000          0.020408          0.040816          0.020408
11     0.000000          0.000000          0.000000          0.000000

Taco Place  Tea Room  Vegetarian / Vegan Restaurant \
0      0.000000  0.021277          0.021277
1      0.020408  0.000000          0.020408
2      0.000000  0.000000          0.065217
3      0.000000  0.000000          0.000000
4      0.000000  0.000000          0.000000
5      0.000000  0.000000          0.000000
6      0.000000  0.000000          0.000000
7      0.000000  0.000000          0.000000
8      0.000000  0.000000          0.000000
9      0.000000  0.000000          0.000000
10     0.000000  0.000000          0.040816
11     0.025641  0.000000          0.000000

Vietnamese Restaurant  Wings Joint
0      0.000000  0.000000
1      0.000000  0.020408
2      0.021739  0.021739
3      0.000000  0.000000
4      0.000000  0.021277
5      0.000000  0.000000
6      0.000000  0.000000
7      0.000000  0.000000
8      0.000000  0.000000
9      0.000000  0.000000
10     0.000000  0.020408
11     0.000000  0.000000

```

[12 rows x 53 columns]

[167]: LaPaz_grouped.shape

[167]: (12, 53)

0.6 TOP 10 RESTAURANTS

```

[172]: 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]

```

```
[173]: num_top_venues = 10

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

# create columns according to number of top venues
columns = ['Nombre']
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['Nombre'] = LaPaz_grouped['Nombre']

for ind in np.arange(LaPaz_grouped.shape[0]):
    neighborhoods_venues_sorted.iloc[ind, 1:] = ↵
    ↵return_most_common_venues(LaPaz_grouped.iloc[ind, :], num_top_venues)

neighborhoods_venues_sorted.head()
```

	Nombre	1st Most Common Venue	\	
0	Macrodistrito Centro, Distrito 1	Restaurant		
1	Macrodistrito Centro, Distrito 2	Restaurant		
2	Macrodistrito Cotahuma, Distrito 3	Restaurant		
3	Macrodistrito Cotahuma, Distrito 5	Latin American Restaurant		
4	Macrodistrito Cotahuma, Distrito 6	Restaurant		
	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	
0	Fast Food Restaurant	Latin American Restaurant	Coffee Shop	
1	BBQ Joint	Fast Food Restaurant	South American Restaurant	
2	Fast Food Restaurant	BBQ Joint	Café	
3	Seafood Restaurant	Ice Cream Shop	Burger Joint	
4	BBQ Joint	Fried Chicken Joint	Latin American Restaurant	
	5th Most Common Venue	6th Most Common Venue	\	
0	Chinese Restaurant	South American Restaurant		
1	Chinese Restaurant	Diner		
2	Vegetarian / Vegan Restaurant	Steakhouse		
3	Fish & Chips Shop	Restaurant		
4	Café	Seafood Restaurant		
	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	\
0	Fried Chicken Joint	Bakery	Breakfast Spot	
1	Bakery	Brazilian Restaurant	Fried Chicken Joint	
2	Bakery	Breakfast Spot	Italian Restaurant	

```

3           Soup Place    Fried Chicken Joint      Breakfast Spot
4           Pastry Shop   Italian Restaurant     Breakfast Spot

10th Most Common Venue
0                  Café
1          Burger Joint
2        Pizza Place
3       Cafeteria
4      Food Truck

```

0.7 Clustering Neighborhoods

```
[174]: # set number of clusters
kclusters = 5

LaPaz_grouped_clustering = LaPaz_grouped.drop('Nombre', 1)

# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).
         fit(LaPaz_grouped_clustering)

# check cluster labels generated for each row in the dataframe
kmeans.labels_[0:10]
```

```
[174]: array([2, 2, 2, 0, 2, 0, 3, 1, 4, 1], dtype=int32)
```

```
[175]: # add clustering labels
neighborhoods_venues_sorted.insert(0, 'Cluster Labels', kmeans.labels_)

LaPaz_merged = LaPaz_data

# merge LaPaz_grouped with LaPaz_data to add latitude/longitude for each neighborhood
LaPaz_merged = LaPaz_merged.join(neighborhoods_venues_sorted.
                                 set_index('Nombre'), on='Nombre')

LaPaz_merged.head() # check the last columns!
```

```
[175]: Distrito Macrodistrito Latitude Longitude Habitantes \
0           1      Centro -16.496946 -68.133407      33889
1           2      Centro -16.499426 -68.122380      40396
2           3    Cotahuma -16.514952 -68.129473      35944
3           4    Cotahuma -16.537604 -68.135559      53461
4           5    Cotahuma -16.494808 -68.151444      50716
```

```
Nombre Cluster Labels \
```

0	Macrodistrito Centro, Distrito 1	2.0	
1	Macrodistrito Centro, Distrito 2	2.0	
2	Macrodistrito Cotahuma, Distrito 3	2.0	
3	Macrodistrito Cotahuma, Distrito 4	NaN	
4	Macrodistrito Cotahuma, Distrito 5	0.0	
	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue \
0	Restaurant	Fast Food Restaurant	Latin American Restaurant
1	Restaurant	BBQ Joint	Fast Food Restaurant
2	Restaurant	Fast Food Restaurant	BBQ Joint
3	NaN	NaN	NaN
4	Latin American Restaurant	Seafood Restaurant	Ice Cream Shop
	4th Most Common Venue	5th Most Common Venue \	
0	Coffee Shop	Chinese Restaurant	
1	South American Restaurant	Chinese Restaurant	
2	Café	Vegetarian / Vegan Restaurant	
3	NaN	NaN	
4	Burger Joint	Fish & Chips Shop	
	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue \
0	South American Restaurant	Fried Chicken Joint	Bakery
1	Diner	Bakery	Brazilian Restaurant
2	Steakhouse	Bakery	Breakfast Spot
3	NaN	NaN	NaN
4	Restaurant	Soup Place	Fried Chicken Joint
	9th Most Common Venue	10th Most Common Venue	
0	Breakfast Spot	Café	
1	Fried Chicken Joint	Burger Joint	
2	Italian Restaurant	Pizza Place	
3	NaN	NaN	
4	Breakfast Spot	Cafeteria	

0.8 Plotting Clustered Neighborhoods

```
[179]: # create map
map_clusters = folium.Map(location=[latitude, longitude], zoom_start=11)

# set color scheme for the clusters
x = np.arange(kclusters)
ys = [i + x + (i*x)**2 for i in range(kclusters)]
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
rainbow = [colors.rgb2hex(i) for i in colors_array]
```

```
[180]: rainbow
```

```
[180]: ['#8000ff', '#00b5eb', '#80ffb4', '#ffb360', '#ff0000']

[187]: import matplotlib.cm as cm
import matplotlib.colors as colors

[204]: #LaPaz_merged['Cluster Labels'].replace(np.nan,0)
#LaPaz_merged['Cluster Labels'] = LaPaz_merged['Cluster Labels'].astype(int)
#LaPaz_data["Distrito"] = LaPaz_data["Distrito"].astype(str)
#LaPaz_merged['Cluster Labels'].dtypes
#LaPaz_merged['Cluster Labels'] = LaPaz_merged['Cluster Labels'].astype(int)

[214]: LaPaz_merged['Cluster Labels'].replace(np.nan,0, inplace=True)

[215]: LaPaz_merged['Cluster Labels'].unique()

[215]: array([2., 0., 3., 1., 4.])

[218]: # create map
map_clusters = folium.Map(location=[latitude, longitude], zoom_start=11)

# set color scheme for the clusters
x = np.arange(kclusters)
ys = [i + x + (i*x)**2 for i in range(kclusters)]
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
rainbow = [colors.rgb2hex(i) for i in colors_array]

# add markers to the map
markers_colors = []
for lat, lon, poi, cluster in zip(LaPaz_merged['Latitude'], 
                                  LaPaz_merged['Longitude'], 
                                  LaPaz_merged['Nombre'], 
                                  LaPaz_merged['Cluster Labels'].astype(int)):
    label = folium.Popup(str(poi) + ' Cluster ' + str(cluster), parse_html=True)
    folium.CircleMarker(
        [lat, lon],
        radius=5,
        popup=label,
        color=rainbow[cluster-1],
        fill=True,
        fill_color=rainbow[cluster-1],
        fill_opacity=0.7).add_to(map_clusters)

map_clusters

[218]: <folium.folium.Map at 0x7faafb172208>
```

```
[219]: LaPaz_merged.loc[LaPaz_merged['Cluster Labels'] == 0, LaPaz_merged.columns[[1] ↴
↪+ list(range(5, LaPaz_merged.shape[1]))]]
```

	Macrodistrito	Nombre	Cluster Labels	\
3	Cotahuma	Macrodistrito Cotahuma, Distrito 4	0.0	
4	Cotahuma	Macrodistrito Cotahuma, Distrito 5	0.0	
6	Max Paredes	Macrodistrito Max Paredes, Distrito 7	0.0	
7	Max Paredes	Macrodistrito Max Paredes, Distrito 8	0.0	
9	Max Paredes	Macrodistrito Max Paredes, Distrito 10	0.0	
10	Periférica	Macrodistrito Periférica, Distrito 11	0.0	
11	Periférica	Macrodistrito Periférica, Distrito 12	0.0	
12	Periférica	Macrodistrito Periférica, Distrito 13	0.0	
16	San Antonio	Macrodistrito San Antonio, Distrito 17	0.0	
18	Sur	Macrodistrito Sur, Distrito 19	0.0	
19	Mallasa	Macrodistrito Mallasa, Distrito 20	0.0	
21	Hampaturi	Macrodistrito Hampaturi, Distrito 22	0.0	
22	Zongo	Macrodistrito Zongo, Distrito 23	0.0	
	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	\
3	NaN	NaN	NaN	
4	Latin American Restaurant	Seafood Restaurant	Ice Cream Shop	
6	NaN	NaN	NaN	
7	Seafood Restaurant	Ice Cream Shop	Breakfast Spot	
9	NaN	NaN	NaN	
10	NaN	NaN	NaN	
11	NaN	NaN	NaN	
12	NaN	NaN	NaN	
16	NaN	NaN	NaN	
18	NaN	NaN	NaN	
19	NaN	NaN	NaN	
21	NaN	NaN	NaN	
22	NaN	NaN	NaN	
	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	\
3	NaN	NaN	NaN	
4	Burger Joint	Fish & Chips Shop	Restaurant	
6	NaN	NaN	NaN	
7	Burger Joint	Soup Place	Latin American Restaurant	
9	NaN	NaN	NaN	
10	NaN	NaN	NaN	
11	NaN	NaN	NaN	
12	NaN	NaN	NaN	
16	NaN	NaN	NaN	
18	NaN	NaN	NaN	
19	NaN	NaN	NaN	
21	NaN	NaN	NaN	
22	NaN	NaN	NaN	

	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	\
3	NaN	NaN	NaN	NaN
4	Soup Place	Fried Chicken Joint	Breakfast Spot	
6	NaN	NaN	NaN	
7	Fish & Chips Shop	Deli / Bodega	French Restaurant	
9	NaN	NaN	NaN	
10	NaN	NaN	NaN	
11	NaN	NaN	NaN	
12	NaN	NaN	NaN	
16	NaN	NaN	NaN	
18	NaN	NaN	NaN	
19	NaN	NaN	NaN	
21	NaN	NaN	NaN	
22	NaN	NaN	NaN	
	10th Most Common Venue			
3	NaN			
4	Cafeteria			
6	NaN			
7	Food Truck			
9	NaN			
10	NaN			
11	NaN			
12	NaN			
16	NaN			
18	NaN			
19	NaN			
21	NaN			
22	NaN			

```
[220]: LaPaz_merged.loc[LaPaz_merged['Cluster Labels'] == 1, LaPaz_merged.columns[[1] ↴
    ↪+ list(range(5, LaPaz_merged.shape[1]))]]
```

	Nombre	Cluster Labels	\	
13	San Antonio	Macrodistrito San Antonio, Distrito 14	1.0	
15	San Antonio	Macrodistrito San Antonio, Distrito 16	1.0	
	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	\
13	Fried Chicken Joint	Wings Joint	Vietnamese Restaurant	
15	Fried Chicken Joint	Wings Joint	Vietnamese Restaurant	
	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	\
13	Gluten-free Restaurant	French Restaurant	Food Truck	
15	Gluten-free Restaurant	French Restaurant	Food Truck	
	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	\

13	Food Stand	Food Court	Fish & Chips Shop
15	Food Stand	Food Court	Fish & Chips Shop

10th Most Common Venue
 13 Fast Food Restaurant
 15 Fast Food Restaurant

```
[221]: LaPaz_merged.loc[LaPaz_merged['Cluster Labels'] == 2, LaPaz_merged.columns[[1] ↴
    ↪+ list(range(5, LaPaz_merged.shape[1]))]]
```

	Macrodistrito	Nombre	Cluster Labels	\
0	Centro	Macrodistrito Centro, Distrito 1	2.0	
1	Centro	Macrodistrito Centro, Distrito 2	2.0	
2	Cotahuma	Macrodistrito Cotahuma, Distrito 3	2.0	
5	Cotahuma	Macrodistrito Cotahuma, Distrito 6	2.0	
17	Sur	Macrodistrito Sur, Distrito 18	2.0	
20	Sur	Macrodistrito Sur, Distrito 21	2.0	
	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	\
0	Restaurant	Fast Food Restaurant	Latin American Restaurant	
1	Restaurant	BBQ Joint	Fast Food Restaurant	
2	Restaurant	Fast Food Restaurant	BBQ Joint	
5	Restaurant	BBQ Joint	Fried Chicken Joint	
17	Fast Food Restaurant	Bakery	Restaurant	
20	Burger Joint	Restaurant	Fast Food Restaurant	
	4th Most Common Venue	5th Most Common Venue	\	
0	Coffee Shop	Chinese Restaurant		
1	South American Restaurant	Chinese Restaurant		
2	Café	Vegetarian / Vegan Restaurant		
5	Latin American Restaurant	Café		
17	BBQ Joint	Seafood Restaurant		
20	Fried Chicken Joint	Pizza Place		
	6th Most Common Venue	7th Most Common Venue	\	
0	South American Restaurant	Fried Chicken Joint		
1	Diner	Bakery		
2	Steakhouse	Bakery		
5	Seafood Restaurant	Pastry Shop		
17	Pizza Place	Vegetarian / Vegan Restaurant		
20	BBQ Joint	Bakery		
	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	
0	Bakery	Breakfast Spot	Café	
1	Brazilian Restaurant	Fried Chicken Joint	Burger Joint	
2	Breakfast Spot	Italian Restaurant	Pizza Place	
5	Italian Restaurant	Breakfast Spot	Food Truck	

```

17      Burger Joint           Steakhouse Latin American Restaurant
20      Sandwich Place        Chinese Restaurant          Cupcake Shop

```

```
[222]: LaPaz_merged.loc[LaPaz_merged['Cluster Labels'] == 3, LaPaz_merged.columns[[1] ↴
    ↪+ list(range(5, LaPaz_merged.shape[1]))]]
```

```

[222]: Macrodistrito           Nombre Cluster Labels \
8   Max Paredes  Macrodistrito Max Paredes, Distrito 9       3.0
               1st Most Common Venue 2nd Most Common Venue 3rd Most Common Venue \
8   Latin American Restaurant      Wings Joint          Hot Dog Joint
               4th Most Common Venue 5th Most Common Venue 6th Most Common Venue \
8   Fried Chicken Joint        French Restaurant      Food Truck
               7th Most Common Venue 8th Most Common Venue 9th Most Common Venue \
8   Food Stand            Food Court        Fish & Chips Shop
               10th Most Common Venue
8   Fast Food Restaurant

```

```
[223]: LaPaz_merged.loc[LaPaz_merged['Cluster Labels'] == 4, LaPaz_merged.columns[[1] ↴
    ↪+ list(range(5, LaPaz_merged.shape[1]))]]
```

```

[223]: Macrodistrito           Nombre Cluster Labels \
14  San Antonio  Macrodistrito San Antonio, Distrito 15       4.0
               1st Most Common Venue 2nd Most Common Venue 3rd Most Common Venue \
14  Restaurant          BBQ Joint        Fast Food Restaurant
               4th Most Common Venue 5th Most Common Venue 6th Most Common Venue \
14  Snack Place        Seafood Restaurant  Comfort Food Restaurant
               7th Most Common Venue 8th Most Common Venue 9th Most Common Venue \
14  French Restaurant      Food Truck          Food Stand
               10th Most Common Venue
14  Food Court

```

```
[ ]:
```