## Introduction

There are many kinds of restaurants and catering services. Whether you are interested in starting a café, a bar, family-style restaurant or event catering business, you will be part of the food services industry. Popular types of restaurants and catering businesses include:

- Gourmet and casual dining
- 2. Fast-food and food trucks
- 3. Pubs, bistros and brasseries
- Coffee shops and cafeterias This will guide and focuses on an individual to restaurants or caterings places for a good meal in Paris France

## TARGET GROUP

Visitors to the French capital Paris. We will all need to find a place to eat especially when it will be more convient. French Cuisine and restaurants are of master chefs. Paris' culinary scene is hardly limited to the contents of Mastering the Art of French Cooking. Paris absolutely excels at an array of foreign cuisines, too. For mindblowingly good Asian food, head to one of the many restaurants on rue de Belleville. For Middle Eastern cuisine, L'as du Falafel is where it's at. And for pizza? Look no further than Coinstot Vino, Louie Louie, or Tripletta.

When it comes to food, the French know what they're doing. Steak frites, fromage, foie gras, crepes, croissants -- you'd be silly to not try 'em in their origin country. A few words of advice: look past the touristy neighborhoods when searching for something great to eat (we recommend venturing into the city's 'more local' neighborhoods, such as the 13th, 14th, 10th, and 20th arrondissements).

## Methodology

Collect Inspection Data. The data is from a public resource that contains all restaurants/catering information in Paris, France. We will want to explore all restaurants/catering serices in Paris. The data with information of restaurants/catering services will come from Foursquare API with "Likes", "response", and "count" in relation to venues and categories. Explore and Understand Data plot a figure to understand how many restaurants/catering service in the area. Also, we will examine the categories for counts, response, and likes for all. Then, we can make recomendations to intended visitors to this area

## Data Requirements:

For this assignment, I will be utilizing the Foursquare API to pull the following location data on restaurants in Toronto, Ontario

Venue Name

Venue ID

Venue Location

Venue Category

Count of Likes

```
In [1]:
        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<mark>'</mark>t
        completed the Foursquare API lab
        from geopy.geocoders import Nominatim # convert an address into latitude and l
        ongitude values
        import requests # library to handle requests
        from pandas.io.json import json normalize # tranform JSON file into a pandas d
        ataframe
        # 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 Foursquare API lab
        import folium # map rendering library
        #import beautiful soup
        from urllib.request import urlopen
        from bs4 import BeautifulSoup
        print('Libraries imported.')
        usage: conda-script.py [-h] [-V] command ...
        conda-script.py: error: unrecognized arguments: # uncomment this line if you
        haven't completed the Foursquare API lab
        usage: conda-script.py [-h] [-V] command ...
        conda-script.py: error: unrecognized arguments: # uncomment this line if you
        haven't completed the Foursquare API lab
        Libraries imported.
```

Geographic Data from API of Paris

```
In [2]: | address = 'Paris'
        geolocator = Nominatim()
        location = geolocator.geocode(address)
        latitude = location.latitude
        longitude = location.longitude
        print('The geograpical coordinate of Paris are {}, {}.'.format(latitude, longi
        tude))
```

C:\Users\anewi\Anaconda3\lib\site-packages\ipykernel\_launcher.py:3: Deprecati onWarning: Using Nominatim with the default "geopy/1.20.0" `user\_agent` is st rongly discouraged, as it violates Nominatim's ToS https://operations.osmfoun dation.org/policies/nominatim/ and may possibly cause 403 and 429 HTTP error s. Please specify a custom `user agent` with `Nominatim(user agent="my-applic ation")` or by overriding the default `user\_agent`: `geopy.geocoders.options. default user agent = "my-application". In geopy 2.0 this will become an exce ption.

This is separate from the ipykernel package so we can avoid doing imports u ntil

The geograpical coordinate of Paris are 48.8566101, 2.3514992.

Using Foursquare API as a Client

Accessing Foursquare API credentials

```
In [3]: CLIENT ID = 'AD3YDLBLIW54WQIF33CSDJTEBNZ5EBKTDZVØSY5H3LURMJYZ'# your Foursquar
        e ID
        CLIENT SECRET = 'MJFLOCTIU2VQ4N5HB2H1YOC23WXW32TENKPFSQIEA0ATMUGC' # your Fours
        quare Secret
        VERSION = '20180605' # Foursquare API version
        print('Your credentails:')
        print('CLIENT_ID: ' + CLIENT_ID)
        print('CLIENT_SECRET:' + CLIENT_SECRET)
```

Your credentails:

CLIENT ID: AD3YDLBLIW54WQIF33CSDJTEBNZ5EBKTDZV0SY5H3LURMJYZ CLIENT SECRET:MJFLOCTIU2VQ4N5HB2H1YOC23WXW32TENKPFSQIEA0ATMUGC

Aquiring URL for all of the foodservices in Paris

```
LIMIT = 100 # limit of number of venues returned by Foursquare API
radius = 500 # define radius
# create URL
url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secre
t={}&v={}&ll={},{}&radius={}&limit={}'.format(
    CLIENT_ID,
    CLIENT SECRET,
    VERSION,
    latitude,
    longitude,
    radius,
    LIMIT)
url
```

Out[4]: 'https://api.foursquare.com/v2/venues/explore?&client id=AD3YDLBLIW54WQIF33CS DJTEBNZ5EBKTDZV0SY5H3LURMJYZ&client secret=MJFL0CTIU2VQ4N5HB2H1Y0C23WXW32TENK PFSQIEA0ATMUGC&v=20180605&ll=48.8566101,2.3514992&radius=500&limit=100'

getting Data into JSON file form the URL of Paris food services.

In [6]: results = requests.get(url).json() results

```
Out[6]: {'meta': {'code': 200, 'requestId': '5d7a4c14018cbb002cfdacfd'},
          'response': {'suggestedFilters': {'header': 'Tap to show:',
            'filters': [{'name': 'Open now', 'key': 'openNow'}]},
           'headerLocation': 'Hôtel-de-Ville'
           'headerFullLocation': 'Hôtel-de-Ville, Paris',
           'headerLocationGranularity': 'neighborhood',
           'totalResults': 196,
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                'location': {'address': "Place de l'Hôtel de Ville",
                 'lat': 48.85692475726913,
                 'lng': 2.3514118156673676,
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                 'cc': 'FR',
                 'city': 'Paris',
                 'state': 'Île-de-France',
                 'country': 'France',
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                  'France']},
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                   'suffix': '.png'},
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                'items': [{'summary': 'This spot is popular',
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```

```
'formattedAddress': ['Quais de Seine', '75000 Paris', 'France']},
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         'shortName': 'Park',
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t de l'Arsenal",
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doors/default_',
          'suffix': '.png'},
         'primary': True}],
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```

```
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ch_',
          'suffix': '.png'},
         'primary': True}],
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```

```
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ault_',
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ert_',
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```

```
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```

```
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uty_cosmetic_',
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```

```
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rtainment/artgallery_',
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niture ',
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```
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```
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         'primary': True}],
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ult_',
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```

```
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       'location': {'address': '9 rue Quincampoix',
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        'lng': 2.3495932201583067,
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e/pub_',
          'suffix': '.png'},
         'primary': True}],
       'photos': {'count': 0, 'groups': []}},
      'referralId': 'e-0-4bb5f0beef159c74bc3075f7-99'}]}]}}
```

Saving Data into Dataframe in a Table form

Storing the data from Foursquare into a dataframe so we can manipulate and use it.

```
In [7]: 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 [8]: # finding the actual data from the Foursquare API
        venues = results['response']['groups'][0]['items']
        nearby_venues = json_normalize(venues)
        filtered_columns = ['venue.name', 'venue.id', 'venue.categories', 'venue.locat
        ion.lat', 'venue.location.lng']
        nearby_venues
        nearby_venues = nearby_venues.loc[:, filtered_columns]
        # filtering data into categories for each row
        nearby_venues['venue.categories'] = nearby_venues.apply(get_category_type, axi
        s=1)
        nearby_venues
        # formatting data in columns
        nearby_venues.columns = [col.split(".")[-1] for col in nearby_venues.columns]
        nearby_venues
```

## Out[8]:

	name	id	categories	lat	Ing
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412
1	Parc Rives de Seine	58e0f18f561ded7abcbbbd01	Park	48.855510	2.351419
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633
5	Paris Rendez-Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873
7	Square de la Tour Saint- Jacques	4dbd336b6a23e294ba405cfa	Park	48.857882	2.348757
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233
9	Tour Saint-Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875
10	LUSH	4d628e33e4fe548152b8979e	Cosmetics Shop	48.857791	2.351622
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642
18	Bagel Baget Cafe	53d13101498e918e659f88a2	Bagel Shop	48.858794	2.350769
19	Yogurt Factory	4ff07da4e4b0b61f2a827eb3	Frozen Yogurt Shop	48.859083	2.353587
20	Au Vieux Paris d'Arcole	4b9ea5cdf964a52094f636e3	French Restaurant	48.854196	2.350312
21	Lucky Records	4e4bfa79a8097d9c84c2b06d	Record Shop	48.858556	2.351442
22	Galerie Art Génération	4b7e7eabf964a52079ef2fe3	Art Gallery	48.858333	2.352194
23	Au Bougnat	4c61c047eb82d13afac003d6	Auvergne Restaurant	48.854302	2.350065
24	Les Mauvais Garçons	4bc9d039937ca5937f57a692	Lyonese Bouchon	48.856829	2.355084
25	Les Souffleurs	4b72fb3ff964a520ba932de3	Gay Bar	48.857070	2.355101
26	Sephora Flash	5624f608498e8ec2bac61cce	Perfume Shop	48.857499	2.352096

	name	id	categories	lat	Ing
27	Bel Canto	4adcda12f964a520513621e3	French Restaurant	48.854632	2.354493
28	Fontaine Stravinsky	4cca7e73c4d06dcbb72d6303	Fountain	48.859578	2.351555
29	Le Peloton Café	5618ca93498e8d9df7d0b582	Coffee Shop	48.855505	2.356034
30	Au Verre Luisant	4b6c67bef964a52059372ce3	Gastropub	48.858512	2.351637
31	Le Cox	4b23dd27f964a5207c5b24e3	Gay Bar	48.858148	2.354887
32	Huygens Cosmetique Naturelle Sur Mesure	51cfcf55498e81b280cea40e	Cosmetics Shop	48.858938	2.353778
33	Marché aux fleurs Reine Elizabeth II	4bc836e514d7952121a868e9	Flower Shop	48.855326	2.347407
34	Kilo Shop	4fa57583e4b00f71952b8dba	Clothing Store	48.858151	2.352096
35	Aux Merveilleux de Fred	549aeb5c498eec3346167659	Dessert Shop	48.855686	2.356369
36	Pozzetto	4bc9bde0b6c49c74fada8e91	Ice Cream Shop	48.856827	2.356269
37	Place du Châtelet	4b7d977ef964a5209fc82fe3	Plaza	48.857714	2.347504
38	Comme à Lisbonne	4e0757e96284d9ee92d4b1ca	Café	48.856767	2.356462
39	Galerie Sakura	536e2e04498e18340911a3c7	Art Gallery	48.857264	2.356032
40	Benoit Paris	4bd6e79c6798ef3b31ca658d	French Restaurant	48.858428	2.350068
41	La Glacerie	5b2e4d6df79faa002cccc2a5	Ice Cream Shop	48.858266	2.353173
42	Benedict	5293ae7d11d2fba382d9f652	French Restaurant	48.858208	2.356081
43	Amorino	5b81a899249623002cbde2b3	Ice Cream Shop	48.854110	2.349764
44	Grizzli Café	4b0c29bff964a520203823e3	French Restaurant	48.858598	2.350000
45	Huré	4f5f2ebee4b033732bc81ff9	Bakery	48.854821	2.350112
46	Stradivarius	4bf6912592d19521d1d3591f	Women's Store	48.857601	2.351116
47	Tasca	5325cbc8498e56006d2a8a77	Portuguese Restaurant	48.856686	2.356374
48	Cathédrale Notre-Dame de Paris	4adcda09f964a520e83321e3	Church	48.853124	2.349561
49	Galerie 88	4adcda04f964a520403221e3	Tea Room	48.854930	2.353650
50	Who's	4e6bb58cd4c01ce0181d014f	Cocktail Bar	48.859490	2.352669
51	Les Pinces	5471c7d5498e7ddb1b9178ff	Seafood Restaurant	48.857552	2.356318
52	Mariage Frères	4adcda04f964a520373221e3	Tea Room	48.857769	2.356618
53	Résistance	555fa507498efe354e7b7f53	Cocktail Bar	48.858042	2.356651
54	Pierre Hermé	51dbf0ce498e1372cbaf23ed	Pastry Shop	48.858127	2.356442
55	Duc des Lombards	4adcda08f964a520ab3321e3	Jazz Club	48.859617	2.348627

	name	id	categories	lat	Ing
56	Une Glace à Paris	557f15bb498ea14854ab0f79	Ice Cream Shop	48.858162	2.356351
57	Grand Cœur	556990cc498e61c8e37e69ce	Restaurant	48.859737	2.353591
58	L'Ébouillanté	4b6eab67f964a52002c62ce3	French Restaurant	48.854861	2.355162
59	Lot Of Wine	510d12a8e4b03bf82f0cf202	Wine Bar	48.854299	2.355268
60	Lizard Lounge	4adcda05f964a520603221e3	Pub	48.857367	2.356160
61	Pamela Popo	4db07d97fa8ca4b3e9e2caca	French Restaurant	48.855749	2.356919
62	Les Dessous d'Apollon	4c499f609e3e2d7f26800449	Lingerie Store	48.857477	2.355545
63	Nature & Découvertes	5655b34d498e3696027cc6e8	Miscellaneous Shop	48.858249	2.356163
64	Archive 18-20	563635e4498efa9960dc2ee7	Furniture / Home Store	48.857794	2.355162
65	Comptoir Gourmet	512534ece4b03a94f9a50313	Restaurant	48.859958	2.354374
66	Le Céleste Gourmand	4bae719df964a5202cb33be3	Chinese Restaurant	48.857566	2.350047
67	Maison Marnay	556efae7498e044289727b52	Bakery	48.858741	2.350045
68	Librairie Flammarion	4c63d90979d1e21e487fd915	Bookstore	48.860270	2.352148
69	She's Cake	562ba4a4498e640cb2b15e14	Cupcake Shop	48.856791	2.356526
70	Boulangerie Julien	4b190655f964a52042d723e3	Bakery	48.858792	2.350079
71	Théâtre du Châtelet	4b8ebd9df964a5203c3433e3	Theater	48.857775	2.346265
72	Place Baudoyer	4adcda0ef964a5203c3521e3	Plaza	48.856264	2.355422
73	Le Mistral	4bea9cef62c0c928fbfee0d4	French Restaurant	48.857134	2.347638
74	Les Mots à la Bouche	4bb5b356941ad13a31761ee3	Bookstore	48.857719	2.357322
75	Tours de la Cathédrale Notre- Dame de Paris	4e96e6a7f79068de88dd5eaf	Scenic Lookout	48.853230	2.349207
76	Luminor Hôtel de Ville	547b457b498e8d78ee354feb	Indie Movie Theater	48.858654	2.353498
77	Monsieur Benjamin	57123235498ea53db2e68191	Dessert Shop	48.859222	2.350270
78	Les Foodies	57726d6a498e0bc923087c7d	Bistro	48.858308	2.354662
79	La Caféothèque de Paris	4bbb21a91261d13aa847eb98	Coffee Shop	48.854197	2.355714
80	Moustaches	4d0e787e8010a1cda184df7e	Pet Store	48.858600	2.355617
81	Melodies graphiques	4e413b1f2271a89dd08ad91e	Arts & Crafts Store	48.855054	2.355579
82	Edwart Chocolatier	543aa57b498e6f51e6bfff25	Chocolate Shop	48.856846	2.356593
83	Boutique du Centre Pompidou	5113ebbce4b0d3c1022aef14	Souvenir Shop	48.860706	2.352362
84	Centre Pompidou – Musée National d'Art Moderne	4adcda0af964a520623421e3	Art Museum	48.860730	2.351660

	name	id	categories	lat	Ing
85	Black Dog	4b7d9398f964a520bcc72fe3	Pub	48.859408	2.349143
86	Crêperie Beaubourg	581cec3e4ed61041c1816763	Creperie	48.859348	2.351439
87	Pozzetto	5264a08c11d2134d3e546b2c	Italian Restaurant	48.856774	2.356964
88	Place Igor Stravinsky	4e84316de5fab91d1ab4de68	Plaza	48.859754	2.351608
89	Mémorial de la Shoah	4ae4549cf964a520039a21e3	Memorial Site	48.854826	2.356254
90	Hôtel Caron de Beaumarchais	4adcd9fff964a520993021e3	Hotel	48.856448	2.356729
91	Sergeant Paper	4d79108e0ddba35dfac24a76	Art Gallery	48.860665	2.350435
92	Les Piétons	4bc9dd020687ef3b719cdacc	Tapas Restaurant	48.859120	2.349917
93	Au Vieux Comptoir	4b27effef964a5209a8c24e3	French Restaurant	48.858893	2.346129
94	Le Dernier Bar avant la Fin du Monde	4fd21c85e4b08315f264bdd5	Bar	48.857971	2.346152
95	Meating Corner	5a1ea646b9ac382318bd8654	Burger Joint	48.859205	2.349764
96	L'Horloge du Palais de la Cité	519a24a8498e55ea1824b30a	Historic Site	48.856139	2.346155
97	Le Saint-Régis	4b1411c6f964a520c09c23e3	Bistro	48.852930	2.353724
98	Les Agités	4f1086d0e4b0aabf16bdfc5c	Bar	48.860007	2.349531
99	L'Imprévu Café	4bb5f0beef159c74bc3075f7	Bar	48.859468	2.349593

## Here data show all tourist sites in Paris

```
may not fit for restaurants
         nearby_venues['categories'].unique()
Out[9]: array(['Plaza', 'Park', 'Pedestrian Plaza', 'Alsatian Restaurant', 'Department Store', 'Souvenir Shop', 'Pastry Shop',
                 'Ice Cream Shop', 'Historic Site', 'Cosmetics Shop', 'Art Gallery',
                 'Furniture / Home Store', 'Gluten-free Restaurant', 'Hotel',
                 'Theater', "Men's Store", 'Cocktail Bar', 'Bagel Shop',
                 'Frozen Yogurt Shop', 'French Restaurant', 'Record Shop',
                 'Auvergne Restaurant', 'Lyonese Bouchon', 'Gay Bar',
                 'Perfume Shop', 'Fountain', 'Coffee Shop', 'Gastropub',
                 'Flower Shop', 'Clothing Store', 'Dessert Shop', 'Café', 'Bakery',
                 "Women's Store", 'Portuguese Restaurant', 'Church', 'Tea Room',
                 'Seafood Restaurant', 'Jazz Club', 'Restaurant', 'Wine Bar', 'Pub',
                 'Lingerie Store', 'Miscellaneous Shop', 'Chinese Restaurant',
                 'Bookstore', 'Cupcake Shop', 'Scenic Lookout',
                 'Indie Movie Theater', 'Bistro', 'Pet Store',
                 'Arts & Crafts Store', 'Chocolate Shop', 'Art Museum', 'Creperie',
                 'Italian Restaurant', 'Memorial Site', 'Tapas Restaurant', 'Bar',
                 'Burger Joint'], dtype=object)
```

In [9]: # finding the list of unique categories from the API so we can see what may or

In [11]: # creating a list of categorie to remove from our dataframe of venus that are not restaurants removal list = ['Gym / Fitness Center', 'Bakery', 'Park', "Women's Store", 'Sp elry Store', 'Record Shop', 'Juice Bar', 'Cosmetics Shop', 'Business Service', 'Salon / Barbershop', 'Li quor Store', 'Grocery Store', 'Stationery Store', 'Pilates Studio', 'Dessert Shop', 'Bookstore', 'Concert Hall', 'Video Game Store', 'Pharmacy', 'Mobile Phone Shop', 'Deli / Bodega'] nearby\_venues2 = nearby\_venues.copy() #cleaning the data for only restaurants #getting a clear dataframe of just restaurants nearby\_venues2 = nearby\_venues2[~nearby\_venues2['categories'].isin(removal\_lis t)] nearby venues2

## Out[11]:

	name	id	categories	lat	Ing
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633
5	Paris Rendez-Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233
9	Tour Saint-Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642
18	Bagel Baget Cafe	53d13101498e918e659f88a2	Bagel Shop	48.858794	2.350769
19	Yogurt Factory	4ff07da4e4b0b61f2a827eb3	Frozen Yogurt Shop	48.859083	2.353587
20	Au Vieux Paris d'Arcole	4b9ea5cdf964a52094f636e3	French Restaurant	48.854196	2.350312
22	Galerie Art Génération	4b7e7eabf964a52079ef2fe3	Art Gallery	48.858333	2.352194
23	Au Bougnat	4c61c047eb82d13afac003d6	Auvergne Restaurant	48.854302	2.350065
24	Les Mauvais Garçons	4bc9d039937ca5937f57a692	Lyonese Bouchon	48.856829	2.355084
25	Les Souffleurs	4b72fb3ff964a520ba932de3	Gay Bar	48.857070	2.355101
26	Sephora Flash	5624f608498e8ec2bac61cce	Perfume Shop	48.857499	2.352096
27	Bel Canto	4adcda12f964a520513621e3	French Restaurant	48.854632	2.354493
28	Fontaine Stravinsky	4cca7e73c4d06dcbb72d6303	Fountain	48.859578	2.351555
29	Le Peloton Café	5618ca93498e8d9df7d0b582	Coffee Shop	48.855505	2.356034
30	Au Verre Luisant	4b6c67bef964a52059372ce3	Gastropub	48.858512	2.351637
31	Le Cox	4b23dd27f964a5207c5b24e3	Gay Bar	48.858148	2.354887

	name	id	categories	lat	Ing
33	Marché aux fleurs Reine Elizabeth II	4bc836e514d7952121a868e9	Flower Shop	48.855326	2.347407
34	Kilo Shop	4fa57583e4b00f71952b8dba	Clothing Store	48.858151	2.352096
36	Pozzetto	4bc9bde0b6c49c74fada8e91	Ice Cream Shop	48.856827	2.356269
37	Place du Châtelet	4b7d977ef964a5209fc82fe3	Plaza	48.857714	2.347504
38	Comme à Lisbonne	4e0757e96284d9ee92d4b1ca	Café	48.856767	2.356462
39	Galerie Sakura	536e2e04498e18340911a3c7	Art Gallery	48.857264	2.356032
40	Benoit Paris	4bd6e79c6798ef3b31ca658d	French Restaurant	48.858428	2.350068
41	La Glacerie	5b2e4d6df79faa002cccc2a5	Ice Cream Shop	48.858266	2.353173
42	Benedict	5293ae7d11d2fba382d9f652	French Restaurant	48.858208	2.356081
43	Amorino	5b81a899249623002cbde2b3	Ice Cream Shop	48.854110	2.349764
44	Grizzli Café	4b0c29bff964a520203823e3	French Restaurant	48.858598	2.350000
47	Tasca	5325cbc8498e56006d2a8a77	Portuguese Restaurant	48.856686	2.356374
48	Cathédrale Notre-Dame de Paris	4adcda09f964a520e83321e3	Church	48.853124	2.349561
49	Galerie 88	4adcda04f964a520403221e3	Tea Room	48.854930	2.353650
50	Who's	4e6bb58cd4c01ce0181d014f	Cocktail Bar	48.859490	2.352669
51	Les Pinces	5471c7d5498e7ddb1b9178ff	Seafood Restaurant	48.857552	2.356318
52	Mariage Frères	4adcda04f964a520373221e3	Tea Room	48.857769	2.356618
53	Résistance	555fa507498efe354e7b7f53	Cocktail Bar	48.858042	2.356651
54	Pierre Hermé	51dbf0ce498e1372cbaf23ed	Pastry Shop	48.858127	2.356442
55	Duc des Lombards	4adcda08f964a520ab3321e3	Jazz Club	48.859617	2.348627
56	Une Glace à Paris	557f15bb498ea14854ab0f79	Ice Cream Shop	48.858162	2.356351
57	Grand Cœur	556990cc498e61c8e37e69ce	Restaurant	48.859737	2.353591
58	L'Ébouillanté	4b6eab67f964a52002c62ce3	French Restaurant	48.854861	2.355162
59	Lot Of Wine	510d12a8e4b03bf82f0cf202	Wine Bar	48.854299	2.355268
60	Lizard Lounge	4adcda05f964a520603221e3	Pub	48.857367	2.356160
61	Pamela Popo	4db07d97fa8ca4b3e9e2caca	French Restaurant	48.855749	2.356919
62	Les Dessous d'Apollon	4c499f609e3e2d7f26800449	Lingerie Store	48.857477	2.355545
63	Nature & Découvertes	5655b34d498e3696027cc6e8	Miscellaneous Shop	48.858249	2.356163

	name	id	categories	lat	Ing
64	Archive 18-20	563635e4498efa9960dc2ee7	Furniture / Home Store	48.857794	2.355162
65	Comptoir Gourmet	512534ece4b03a94f9a50313	Restaurant	48.859958	2.354374
66	Le Céleste Gourmand	4bae719df964a5202cb33be3	Chinese Restaurant	48.857566	2.350047
69	She's Cake	562ba4a4498e640cb2b15e14	Cupcake Shop	48.856791	2.356526
71	Théâtre du Châtelet	4b8ebd9df964a5203c3433e3	Theater	48.857775	2.346265
72	Place Baudoyer	4adcda0ef964a5203c3521e3	Plaza	48.856264	2.355422
73	Le Mistral	4bea9cef62c0c928fbfee0d4	French Restaurant	48.857134	2.347638
75	Tours de la Cathédrale Notre- Dame de Paris	4e96e6a7f79068de88dd5eaf	Scenic Lookout	48.853230	2.349207
76	Luminor Hôtel de Ville	547b457b498e8d78ee354feb	Indie Movie Theater	48.858654	2.353498
78	Les Foodies	57726d6a498e0bc923087c7d	Bistro	48.858308	2.354662
79	La Caféothèque de Paris	4bbb21a91261d13aa847eb98	Coffee Shop	48.854197	2.355714
81	Melodies graphiques	4e413b1f2271a89dd08ad91e	Arts & Crafts Store	48.855054	2.355579
82	Edwart Chocolatier	543aa57b498e6f51e6bfff25	Chocolate Shop	48.856846	2.356593
83	Boutique du Centre Pompidou	5113ebbce4b0d3c1022aef14	Souvenir Shop	48.860706	2.352362
84	Centre Pompidou – Musée National d'Art Moderne	4adcda0af964a520623421e3	Art Museum	48.860730	2.351660
85	Black Dog	4b7d9398f964a520bcc72fe3	Pub	48.859408	2.349143
86	Crêperie Beaubourg	581cec3e4ed61041c1816763	Creperie	48.859348	2.351439
87	Pozzetto	5264a08c11d2134d3e546b2c	Italian Restaurant	48.856774	2.356964
88	Place Igor Stravinsky	4e84316de5fab91d1ab4de68	Plaza	48.859754	2.351608
89	Mémorial de la Shoah	4ae4549cf964a520039a21e3	Memorial Site	48.854826	2.356254
90	Hôtel Caron de Beaumarchais	4adcd9fff964a520993021e3	Hotel	48.856448	2.356729
91	Sergeant Paper	4d79108e0ddba35dfac24a76	Art Gallery	48.860665	2.350435
92	Les Piétons	4bc9dd020687ef3b719cdacc	Tapas Restaurant	48.859120	2.349917
93	Au Vieux Comptoir	4b27effef964a5209a8c24e3	French Restaurant	48.858893	2.346129
94	Le Dernier Bar avant la Fin du Monde	4fd21c85e4b08315f264bdd5	Bar	48.857971	2.346152
95	Meating Corner	5a1ea646b9ac382318bd8654	Burger Joint	48.859205	2.349764
96	L'Horloge du Palais de la Cité	519a24a8498e55ea1824b30a	Historic Site	48.856139	2.346155
97	Le Saint-Régis	4b1411c6f964a520c09c23e3	Bistro	48.852930	2.353724
98	Les Agités	4f1086d0e4b0aabf16bdfc5c	Bar	48.860007	2.349531

	name	id	categories	lat	Ing
99	I 'Imprévu Café	4bb5f0beef159c74bc3075f7	Bar	48.859468	2.349593

```
In [12]: #finding the list of venues of restaurants in paris
         venue_id_list = nearby_venues2['id'].tolist()
         venue_id_list
```

```
Out[12]: ['4bf41231e5eba59334341f90',
           '58d800df9435a979b8a645fa'
           '54351b59498e123ee4afc7ff',
           '4b4b6a3df964a520b89a26e3'
           '5361075a498ea34171cb06ca',
           '59247f4e0d2be70573edd834'
           '4cb2fc20db32f04d6da9d34d'.
           '4b5c7d1ff964a5205f3229e3',
           '4c0bc2fdbbc676b018f64bd5'
           '4b533b45f964a520509327e3',
           '5901dcce5d891b426af3e948'
           '4e84bdeb2fb6611bdfd704ea',
           '4adcda15f964a520a13721e3'
           '4be150de0365c9b6bc4cb338'
           '53aaac02498e602fdceec750',
           '53d13101498e918e659f88a2'
           '4ff07da4e4b0b61f2a827eb3',
           '4b9ea5cdf964a52094f636e3'
           '4b7e7eabf964a52079ef2fe3'
           '4c61c047eb82d13afac003d6',
           '4bc9d039937ca5937f57a692'
           '4b72fb3ff964a520ba932de3',
           '5624f608498e8ec2bac61cce'
           '4adcda12f964a520513621e3'
           '4cca7e73c4d06dcbb72d6303',
           '5618ca93498e8d9df7d0b582',
           '4b6c67bef964a52059372ce3',
           '4b23dd27f964a5207c5b24e3'
           '4bc836e514d7952121a868e9'
           '4fa57583e4b00f71952b8dba'
           '4bc9bde0b6c49c74fada8e91'
           '4b7d977ef964a5209fc82fe3',
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           '5b2e4d6df79faa002cccc2a5'.
           '5293ae7d11d2fba382d9f652',
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           '5325cbc8498e56006d2a8a77'
           '4adcda09f964a520e83321e3',
           '4adcda04f964a520403221e3'
           '4e6bb58cd4c01ce0181d014f'
           '5471c7d5498e7ddb1b9178ff'
           '4adcda04f964a520373221e3'
           '555fa507498efe354e7b7f53',
           '51dbf0ce498e1372cbaf23ed'
           '4adcda08f964a520ab3321e3'
           '557f15bb498ea14854ab0f79',
           '556990cc498e61c8e37e69ce',
           '4b6eab67f964a52002c62ce3',
           '510d12a8e4b03bf82f0cf202'
           '4adcda05f964a520603221e3'
           '4db07d97fa8ca4b3e9e2caca',
           '4c499f609e3e2d7f26800449'
           '5655b34d498e3696027cc6e8',
           '563635e4498efa9960dc2ee7',
```

```
'512534ece4b03a94f9a50313',
           '4bae719df964a5202cb33be3'
           '562ba4a4498e640cb2b15e14',
           '4b8ebd9df964a5203c3433e3',
           '4adcda0ef964a5203c3521e3',
           '4bea9cef62c0c928fbfee0d4'
           '4e96e6a7f79068de88dd5eaf'
           '547b457b498e8d78ee354feb',
           '57726d6a498e0bc923087c7d'
           '4bbb21a91261d13aa847eb98',
           '4e413b1f2271a89dd08ad91e'
           '543aa57b498e6f51e6bfff25',
           '5113ebbce4b0d3c1022aef14',
           '4adcda0af964a520623421e3',
           '4b7d9398f964a520bcc72fe3',
           '581cec3e4ed61041c1816763'
           '5264a08c11d2134d3e546b2c',
           '4e84316de5fab91d1ab4de68'
           '4ae4549cf964a520039a21e3',
           '4adcd9fff964a520993021e3',
           '4d79108e0ddba35dfac24a76'
           '4bc9dd020687ef3b719cdacc',
           '4b27effef964a5209a8c24e3'
           '4fd21c85e4b08315f264bdd5',
           '5a1ea646b9ac382318bd8654',
           '519a24a8498e55ea1824b30a'
           '4b1411c6f964a520c09c23e3',
           '4f1086d0e4b0aabf16bdfc5c'
           '4bb5f0beef159c74bc3075f7'l
In [13]: # selecting venues with the likes received from the API based on venue ID
          url list = []
          like list = []
          json list = []
          for i in venue id list:
              venue url = 'https://api.foursquare.com/v2/venues/{}/likes?client id={}&cl
          ient secret={}&v={}'.format(i, CLIENT ID, CLIENT SECRET, VERSION)
              url list.append(venue url)
          for link in url list:
              result = requests.get(link).json()
              likes = result['response']['likes']['count']
              like list.append(likes)
```

```
[593, 12, 46, 1115, 15, 21, 38, 278, 26, 375, 18, 31, 76, 195, 147, 46, 64, 6
2, 9, 47, 36, 66, 8, 25, 109, 123, 35, 108, 136, 65, 179, 244, 191, 39, 74, 1
0, 505, 5, 36, 19, 8581, 11, 120, 119, 210, 52, 160, 108, 109, 55, 83, 22, 12
4, 100, 19, 33, 22, 128, 19, 14, 228, 15, 43, 89, 13, 10, 453, 6, 16, 62, 536
0, 88, 23, 38, 33, 53, 20, 31, 139, 70, 485, 7, 8, 487, 17, 92]
```

There is a range of likes from 5 to 8581 in the dataframe. These comparise of 86 venues. Please Note this change as we run the code as the data set is updated by the likes.

print(like list)

```
In [14]: # Confirming the number of venues in the dataframe
         print(len(like_list))
         print(len(venue_id_list))
```

86

86

#### **Data Preparation**

```
In [15]: #recaping the dataframe
         to_venues = nearby_venues2.copy()
         to_venues.head(15)
```

#### Out[15]:

	name	id	categories	lat	Ing
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633
5	Paris Rendez-Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233
9	Tour Saint-Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642

```
In [16]: # combine the list of likes into the dataframe
         to_venues['total likes'] = like_list
         to_venues.head(15)
```

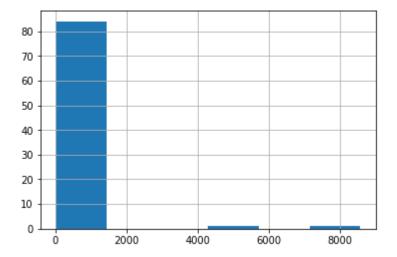
#### Out[16]:

	name	id	categories	lat	Ing	total likes
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412	593
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289	12
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381	46
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633	1115
5	Paris Rendez-Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914	15
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873	21
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233	38
9	Tour Saint-Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875	278
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217	26
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161	375
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605	18
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937	31
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911	76
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908	195
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642	147

## In [17]: # taking the stats of the likes print(to\_venues['total likes'].max()) print(to\_venues['total likes'].min()) print(to\_venues['total likes'].median()) print(to\_venues['total likes'].mean())

```
8581
5
54.0
269.7906976744186
```

```
In [19]: # visualizing the total likes on a histogram
         import matplotlib.pyplot as plt
         to venues['total likes'].hist(bins=6)
         plt.show()
```



```
In [20]: # creating the percentals of the likes
         print(np.percentile(to venues['total likes'], 25))
         print(np.percentile(to_venues['total likes'], 50))
         print(np.percentile(to venues['total likes'], 75))
         21.25
         54.0
         123.75
```

The 25th percental likes is 21.25, the 50th percental is 54.0 and the 75th percental is 23.75. The 50th percental sometimes is the same as the Mean.

```
# categorizing the likes in the form of: less than 24, 24-45, 45-76, 76> as:
In [21]:
         # Lessthan 24poor, 24-45 below avg, 45-76 abv avg,and 76 and above great.
         poor = to venues['total likes']<=24</pre>
         below_avg = to_venues[(to_venues['total likes']>24) & (to_venues['total likes']
         ]<=45)]
         abv avg = to venues[(to venues['total likes']>45) & (to venues['total likes']<
         great = to venues['total likes']>76
```

```
In [22]: # with the aboe conditions set here are how they appear in the data
          def conditions(s):
              if s['total likes']<=24:</pre>
                   return 'poor'
              if s['total likes']<=45:</pre>
                   return 'below avg'
              if s['total likes']<=76:</pre>
                   return 'avg avg'
              if s['total likes']>76:
                   return 'great'
          to_venues['total likes_cat']=to_venues.apply(conditions, axis=1)
```

In [23]: to\_venues

## Out[23]:

	name id		categories	lat	Ing	total likes	total likes_cat
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412	593	great
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289	12	poor
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381	46	avg avg
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633	1115	great
5	Paris Rendez- Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914	15	poor
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873	21	poor
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233	38	below avg
9	Tour Saint- Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875	278	great
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217	26	below avg
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161	375	great
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605	18	poor
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937	31	below avg
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911	76	avg avg
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908	195	great
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642	147	great
18	Bagel Baget Cafe	53d13101498e918e659f88a2	Bagel Shop	48.858794	2.350769	46	avg avg
19	Yogurt Factory	4ff07da4e4b0b61f2a827eb3	Frozen Yogurt Shop	48.859083	2.353587	64	avg avg
20	Au Vieux Paris d'Arcole	4b9ea5cdf964a52094f636e3	French Restaurant	48.854196	2.350312	62	avg avg
22	Galerie Art Génération	4b7e7eabf964a52079ef2fe3	Art Gallery	48.858333	2.352194	9	poor
23	Au Bougnat	4c61c047eb82d13afac003d6	Auvergne Restaurant	48.854302	2.350065	47	avg avg
24	Les Mauvais Garçons	4bc9d039937ca5937f57a692	Lyonese Bouchon	48.856829	2.355084	36	below avg
25	Les Souffleurs	4b72fb3ff964a520ba932de3	Gay Bar	48.857070	2.355101	66	avg avg

	name	id	categories	lat	Ing	total likes	total likes_cat
26	Sephora Flash	5624f608498e8ec2bac61cce	Perfume Shop	48.857499	2.352096	8	poor
27	Bel Canto	4adcda12f964a520513621e3	French Restaurant	48.854632	2.354493	25	below avg
28	Fontaine Stravinsky	4cca7e73c4d06dcbb72d6303	Fountain	48.859578	2.351555	109	great
29	Le Peloton Café	5618ca93498e8d9df7d0b582	Coffee Shop	48.855505	2.356034	123	great
30	Au Verre Luisant	4b6c67bef964a52059372ce3	Gastropub	48.858512	2.351637	35	below avg
31	Le Cox	4b23dd27f964a5207c5b24e3	Gay Bar	48.858148	2.354887	108	great
33	Marché aux fleurs Reine Elizabeth II	4bc836e514d7952121a868e9	Flower Shop	48.855326	2.347407	136	great
34	Kilo Shop	4fa57583e4b00f71952b8dba	Clothing Store	48.858151	2.352096	65	avg avg
36	Pozzetto	4bc9bde0b6c49c74fada8e91	Ice Cream Shop	48.856827	2.356269	179	great
37	Place du Châtelet	4b7d977ef964a5209fc82fe3	Plaza	48.857714	2.347504	244	great
38	Comme à Lisbonne	4e0757e96284d9ee92d4b1ca	Café	48.856767	2.356462	191	great
39	Galerie Sakura	536e2e04498e18340911a3c7	Art Gallery	48.857264	2.356032	39	below avg
40	Benoit Paris	4bd6e79c6798ef3b31ca658d	French Restaurant	48.858428	2.350068	74	avg avg
41	La Glacerie	5b2e4d6df79faa002cccc2a5	Ice Cream Shop	48.858266	2.353173	10	poor
42	Benedict	5293ae7d11d2fba382d9f652	French Restaurant	48.858208	2.356081	505	great
43	Amorino	5b81a899249623002cbde2b3	Ice Cream Shop	48.854110	2.349764	5	poor
44	Grizzli Café	4b0c29bff964a520203823e3	French Restaurant	48.858598	2.350000	36	below avg
47	Tasca	5325cbc8498e56006d2a8a77	Portuguese Restaurant	48.856686	2.356374	19	poor
48	Cathédrale Notre-Dame de Paris	4adcda09f964a520e83321e3	Church	48.853124	2.349561	8581	great
49	Galerie 88	4adcda04f964a520403221e3	Tea Room	48.854930	2.353650	11	poor
50	Who's	4e6bb58cd4c01ce0181d014f	Cocktail Bar	48.859490	2.352669	120	great
51	Les Pinces	5471c7d5498e7ddb1b9178ff	Seafood Restaurant	48.857552	2.356318	119	great
52	Mariage Frères	4adcda04f964a520373221e3	Tea Room	48.857769	2.356618	210	great
53	Résistance	555fa507498efe354e7b7f53	Cocktail Bar	48.858042	2.356651	52	avg avg

	name	id	categories	lat	Ing	total likes	total likes_cat
54	Pierre Hermé	51dbf0ce498e1372cbaf23ed	Pastry Shop	48.858127	2.356442	160	great
55	Duc des Lombards	4adcda08f964a520ab3321e3	Jazz Club	48.859617	2.348627	108	great
56	Une Glace à Paris	557f15bb498ea14854ab0f79	Ice Cream Shop	48.858162	2.356351	109	great
57	Grand Cœur	556990cc498e61c8e37e69ce	Restaurant	48.859737	2.353591	55	avg avg
58	L'Ébouillanté	4b6eab67f964a52002c62ce3	French Restaurant	48.854861	2.355162	83	great
59	Lot Of Wine	510d12a8e4b03bf82f0cf202	Wine Bar	48.854299	2.355268	22	poor
60	Lizard Lounge	4adcda05f964a520603221e3	Pub	48.857367	2.356160	124	great
61	Pamela Popo	4db07d97fa8ca4b3e9e2caca	French Restaurant	48.855749	2.356919	100	great
62	Les Dessous d'Apollon	4c499f609e3e2d7f26800449	Lingerie Store	48.857477	2.355545	19	poor
63	Nature & Découvertes	5655b34d498e3696027cc6e8	Miscellaneous Shop	48.858249	2.356163	33	below avg
64	Archive 18-20	563635e4498efa9960dc2ee7	Furniture / Home Store	48.857794	2.355162	22	poor
65	Comptoir Gourmet	512534ece4b03a94f9a50313	Restaurant	48.859958	2.354374	128	great
66	Le Céleste Gourmand	4bae719df964a5202cb33be3	Chinese Restaurant	48.857566	2.350047	19	poor
69	She's Cake	562ba4a4498e640cb2b15e14	Cupcake Shop	48.856791	2.356526	14	poor
71	Théâtre du Châtelet	4b8ebd9df964a5203c3433e3	Theater	48.857775	2.346265	228	great
72	Place Baudoyer	4adcda0ef964a5203c3521e3	Plaza	48.856264	2.355422	15	poor
73	Le Mistral	4bea9cef62c0c928fbfee0d4	French Restaurant	48.857134	2.347638	43	below avg
75	Tours de la Cathédrale Notre-Dame de Paris	4e96e6a7f79068de88dd5eaf	Scenic Lookout	48.853230	2.349207	89	great
76	Luminor Hôtel de Ville	547b457b498e8d78ee354feb	Indie Movie Theater	48.858654	2.353498	13	poor
78	Les Foodies	57726d6a498e0bc923087c7d	Bistro	48.858308	2.354662	10	poor
79	La Caféothèque de Paris	4bbb21a91261d13aa847eb98	Coffee Shop	48.854197	2.355714	453	great
81	Melodies graphiques	4e413b1f2271a89dd08ad91e	Arts & Crafts Store	48.855054	2.355579	6	poor
82	Edwart Chocolatier	543aa57b498e6f51e6bfff25	Chocolate Shop	48.856846	2.356593	16	poor

	name	id	categories	categories lat		total likes	total likes_cat
83	Boutique du Centre Pompidou	5113ebbce4b0d3c1022aef14	Souvenir Shop	48.860706	2.352362	62	avg avg
84	Centre Pompidou – Musée National d'Art Moderne	4adcda0af964a520623421e3	Art Museum	48.860730	2.351660	5360	great
85	Black Dog	4b7d9398f964a520bcc72fe3	Pub	48.859408	2.349143	88	great
86	Crêperie Beaubourg	581cec3e4ed61041c1816763	Creperie	48.859348	2.351439	23	poor
87	Pozzetto	5264a08c11d2134d3e546b2c	Italian Restaurant	48.856774	2.356964	38	below avg
88	Place Igor Stravinsky	4e84316de5fab91d1ab4de68	Plaza	48.859754	2.351608	33	below avg
89	Mémorial de la Shoah	4ae4549cf964a520039a21e3	Memorial Site	48.854826	2.356254	53	avg avg
90	Hôtel Caron de Beaumarchais	4adcd9fff964a520993021e3	Hotel	48.856448	2.356729	20	poor
91	Sergeant Paper	4d79108e0ddba35dfac24a76	Art Gallery	48.860665	2.350435	31	below avg
92	Les Piétons	4bc9dd020687ef3b719cdacc	Tapas Restaurant	48.859120	2.349917	139	great
93	Au Vieux Comptoir	4b27effef964a5209a8c24e3	French Restaurant	48.858893	2.346129	70	avg avg
94	Le Dernier Bar avant la Fin du Monde	4fd21c85e4b08315f264bdd5	Bar	48.857971	2.346152	485	great
95	Meating Corner	5a1ea646b9ac382318bd8654	Burger Joint	48.859205	2.349764	7	poor
96	L'Horloge du Palais de la Cité	519a24a8498e55ea1824b30a	Historic Site	48.856139	2.346155	8	poor
97	Le Saint- Régis	4b1411c6f964a520c09c23e3	Bistro	48.852930	2.353724	487	great
98	Les Agités	4f1086d0e4b0aabf16bdfc5c	Bar	48.860007	2.349531	17	poor
99	L'Imprévu Café	4bb5f0beef159c74bc3075f7	Bar	48.859468	2.349593	92	great
4							<b>•</b>

```
In [24]: # finding all unique categories in the dataframe
         to_venues['categories'].unique()
Out[24]: array(['Plaza', 'Pedestrian Plaza', 'Alsatian Restaurant',
                 'Department Store', 'Souvenir Shop', 'Pastry Shop',
                 'Ice Cream Shop', 'Historic Site', 'Art Gallery',
                 'Furniture / Home Store', 'Gluten-free Restaurant', 'Hotel',
                 'Theater', "Men's Store", 'Cocktail Bar', 'Bagel Shop',
                 'Frozen Yogurt Shop', 'French Restaurant', 'Auvergne Restaurant',
                 'Lyonese Bouchon', 'Gay Bar', 'Perfume Shop', 'Fountain',
                 'Coffee Shop', 'Gastropub', 'Flower Shop', 'Clothing Store',
                 'Café', 'Portuguese Restaurant', 'Church', 'Tea Room',
                 'Seafood Restaurant', 'Jazz Club', 'Restaurant', 'Wine Bar', 'Pub',
                 'Lingerie Store', 'Miscellaneous Shop', 'Chinese Restaurant',
                 'Cupcake Shop', 'Scenic Lookout', 'Indie Movie Theater', 'Bistro',
                 'Arts & Crafts Store', 'Chocolate Shop', 'Art Museum', 'Creperie',
                 'Italian Restaurant', 'Memorial Site', 'Tapas Restaurant', 'Bar',
                 'Burger Joint'], dtype=object)
In [25]: # creating and combining into the dataframe the categories, likes, and perform
         ance
         bars = ['Pub', 'Cocktail Bar', 'Bar', 'Dive Bar', 'Sports Bar']
         other = ['Bagel Shop', 'Tea Room', 'Donut Shop', 'Coffee Shop', 'Bubble Tea Sh
         op', 'Sandwich Place', 'Boutique', 'Ice Cream Shop']
         euro asia indian food = ['Falafel Restaurant', 'Korean Restaurant','Sushi Rest
         aurant', 'Indian Restaurant', 'Japanese Restaurant', 'Poke Place', 'Thai Resta
         urant', 'Vietnamese Restaurant']
         mex southam food = ['Cuban Restaurant', 'Mexican Restaurant', 'South American
          Restaurant', 'Latin American Restaurant']
         american food = ['Burger Joint', 'Restaurant', 'American Restaurant']
         italian food = ['Italian Restaurant', 'Seafood Restaurant', 'Pizza Place']
         def conditions2(s):
             if s['categories'] in bars:
                 return 'bars'
             if s['categories'] in other:
                  return 'other'
             if s['categories'] in euro asia indian food:
                  return 'euro asia indian food'
             if s['categories'] in mex southam food:
                  return 'mex southan food'
             if s['categories'] in american food:
                 return 'american food'
             if s['categories'] in italian food:
                  return 'italian food'
```

to venues['categories new']=to venues.apply(conditions2, axis=1)

In [26]: to\_venues

## Out[26]:

	name id		categories	lat	Ing	total likes	total likes_cat
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412	593	great
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289	12	poor
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381	46	avg avg
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633	1115	great
5	Paris Rendez- Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914	15	poor
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873	21	poor
8	Häagen-Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233	38	below avg
9	Tour Saint- Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875	278	great
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217	26	below avg
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161	375	great
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605	18	poor
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937	31	below avg
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911	76	avg avg
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908	195	great
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642	147	great
18	Bagel Baget Cafe	53d13101498e918e659f88a2	Bagel Shop	48.858794	2.350769	46	avg avg
19	Yogurt Factory	4ff07da4e4b0b61f2a827eb3	Frozen Yogurt Shop	48.859083	2.353587	64	avg avg
20	Au Vieux Paris d'Arcole	4b9ea5cdf964a52094f636e3	French Restaurant	48.854196	2.350312	62	avg avg
22	Galerie Art Génération	4b7e7eabf964a52079ef2fe3	Art Gallery	48.858333	2.352194	9	poor
23	Au Bougnat	4c61c047eb82d13afac003d6	Auvergne Restaurant	48.854302	2.350065	47	avg avg
24	Les Mauvais Garçons	4bc9d039937ca5937f57a692	Lyonese Bouchon	48.856829	2.355084	36	below avg
25	Les Souffleurs	4b72fb3ff964a520ba932de3	Gay Bar	48.857070	2.355101	66	avg avg

	name	id	categories	lat	Ing	total likes	total likes_cat
26	Sephora Flash	5624f608498e8ec2bac61cce	Perfume Shop	48.857499	2.352096	8	poor
27	Bel Canto	4adcda12f964a520513621e3	French Restaurant	48.854632	2.354493	25	below avg
28	Fontaine Stravinsky	4cca7e73c4d06dcbb72d6303	Fountain	48.859578	2.351555	109	great
29	Le Peloton Café	5618ca93498e8d9df7d0b582	Coffee Shop	48.855505	2.356034	123	great
30	Au Verre Luisant	4b6c67bef964a52059372ce3	Gastropub	48.858512	2.351637	35	below avg
31	Le Cox	4b23dd27f964a5207c5b24e3	Gay Bar	48.858148	2.354887	108	great
33	Marché aux fleurs Reine Elizabeth II	4bc836e514d7952121a868e9	Flower Shop	48.855326	2.347407	136	great
34	Kilo Shop	4fa57583e4b00f71952b8dba	Clothing Store	48.858151	2.352096	65	avg avg
36	Pozzetto	4bc9bde0b6c49c74fada8e91	Ice Cream Shop	48.856827	2.356269	179	great
37	Place du Châtelet	4b7d977ef964a5209fc82fe3	Plaza	48.857714	2.347504	244	great
38	Comme à Lisbonne	4e0757e96284d9ee92d4b1ca	Café	48.856767	2.356462	191	great
39	Galerie Sakura	536e2e04498e18340911a3c7	Art Gallery	48.857264	2.356032	39	below avg
40	Benoit Paris	4bd6e79c6798ef3b31ca658d	French Restaurant	48.858428	2.350068	74	avg avg
41	La Glacerie	5b2e4d6df79faa002cccc2a5	Ice Cream Shop	48.858266	2.353173	10	poor
42	Benedict	5293ae7d11d2fba382d9f652	French Restaurant	48.858208	2.356081	505	great
43	Amorino	5b81a899249623002cbde2b3	Ice Cream Shop	48.854110	2.349764	5	poor
44	Grizzli Café	4b0c29bff964a520203823e3	French Restaurant	48.858598	2.350000	36	below avg
47	Tasca	5325cbc8498e56006d2a8a77	Portuguese Restaurant	48.856686	2.356374	19	poor
48	Cathédrale Notre-Dame de Paris	4adcda09f964a520e83321e3	Church	48.853124	2.349561	8581	great
49	Galerie 88	4adcda04f964a520403221e3	Tea Room	48.854930	2.353650	11	poor
50	Who's	4e6bb58cd4c01ce0181d014f	Cocktail Bar	48.859490	2.352669	120	great
51	Les Pinces	5471c7d5498e7ddb1b9178ff	Seafood Restaurant	48.857552	2.356318	119	great
52	Mariage Frères	4adcda04f964a520373221e3	Tea Room	48.857769	2.356618	210	great
53	Résistance	555fa507498efe354e7b7f53	Cocktail Bar	48.858042	2.356651	52	avg avg

	name	id	categories	lat	Ing	total likes	total likes_cat
54	Pierre Hermé	51dbf0ce498e1372cbaf23ed	Pastry Shop	48.858127	2.356442	160	great
55	Duc des Lombards	4adcda08f964a520ab3321e3	Jazz Club	48.859617	2.348627	108	great
56	Une Glace à Paris	557f15bb498ea14854ab0f79	Ice Cream Shop	48.858162	2.356351	109	great
57	Grand Cœur	556990cc498e61c8e37e69ce	Restaurant	48.859737	2.353591	55	avg avg
58	L'Ébouillanté	4b6eab67f964a52002c62ce3	French Restaurant	48.854861	2.355162	83	great
59	Lot Of Wine	510d12a8e4b03bf82f0cf202	Wine Bar	48.854299	2.355268	22	poor
60	Lizard Lounge	4adcda05f964a520603221e3	Pub	48.857367	2.356160	124	great
61	Pamela Popo	4db07d97fa8ca4b3e9e2caca	French Restaurant	48.855749	2.356919	100	great
62	Les Dessous d'Apollon	4c499f609e3e2d7f26800449	Lingerie Store	48.857477	2.355545	19	poor
63	Nature & Découvertes	5655b34d498e3696027cc6e8	Miscellaneous Shop	48.858249	2.356163	33	below avg
64	Archive 18-20	563635e4498efa9960dc2ee7	Furniture / Home Store	48.857794	2.355162	22	poor
65	Comptoir Gourmet	512534ece4b03a94f9a50313	Restaurant	48.859958	2.354374	128	great
66	Le Céleste Gourmand	4bae719df964a5202cb33be3	Chinese Restaurant	48.857566	2.350047	19	poor
69	She's Cake	562ba4a4498e640cb2b15e14	Cupcake Shop	48.856791	2.356526	14	poor
71	Théâtre du Châtelet	4b8ebd9df964a5203c3433e3	Theater	48.857775	2.346265	228	great
72	Place Baudoyer	4adcda0ef964a5203c3521e3	Plaza	48.856264	2.355422	15	poor
73	Le Mistral	4bea9cef62c0c928fbfee0d4	French Restaurant	48.857134	2.347638	43	below avg
75	Tours de la Cathédrale Notre-Dame de Paris	4e96e6a7f79068de88dd5eaf	Scenic Lookout	48.853230	2.349207	89	great
76	Luminor Hôtel de Ville	547b457b498e8d78ee354feb	Indie Movie Theater	48.858654	2.353498	13	poor
78	Les Foodies	57726d6a498e0bc923087c7d	Bistro	48.858308	2.354662	10	poor
79	La Caféothèque de Paris	4bbb21a91261d13aa847eb98	Coffee Shop	48.854197	2.355714	453	great
81	Melodies graphiques	4e413b1f2271a89dd08ad91e	Arts & Crafts Store	48.855054	2.355579	6	poor
82	Edwart Chocolatier	543aa57b498e6f51e6bfff25	Chocolate Shop	48.856846	2.356593	16	poor

	name	id	categories	lat	Ing	total likes	total likes_cat
83	Boutique du Centre Pompidou	5113ebbce4b0d3c1022aef14	Souvenir Shop	48.860706	2.352362	62	avg avg
84	Centre Pompidou – Musée National d'Art Moderne	4adcda0af964a520623421e3	Art Museum	48.860730	2.351660	5360	great
85	Black Dog	4b7d9398f964a520bcc72fe3	Pub	48.859408	2.349143	88	great
86	Crêperie Beaubourg	581cec3e4ed61041c1816763	Creperie	48.859348	2.351439	23	poor
87	Pozzetto	5264a08c11d2134d3e546b2c	Italian Restaurant	48.856774	2.356964	38	below avg
88	Place Igor Stravinsky	4e84316de5fab91d1ab4de68	Plaza	48.859754	2.351608	33	below avg
89	Mémorial de la Shoah	4ae4549cf964a520039a21e3	Memorial Site	48.854826	2.356254	53	avg avg
90	Hôtel Caron de Beaumarchais	4adcd9fff964a520993021e3	Hotel	48.856448	2.356729	20	poor
91	Sergeant Paper	4d79108e0ddba35dfac24a76	Art Gallery	48.860665	2.350435	31	below avg
92	Les Piétons	4bc9dd020687ef3b719cdacc	Tapas Restaurant	48.859120	2.349917	139	great
93	Au Vieux Comptoir	4b27effef964a5209a8c24e3	French Restaurant	48.858893	2.346129	70	avg avg
94	Le Dernier Bar avant la Fin du Monde	4fd21c85e4b08315f264bdd5	Bar	48.857971	2.346152	485	great
95	Meating Corner	5a1ea646b9ac382318bd8654	Burger Joint	48.859205	2.349764	7	poor
96	L'Horloge du Palais de la Cité	519a24a8498e55ea1824b30a	Historic Site	48.856139	2.346155	8	poor
97	Le Saint- Régis	4b1411c6f964a520c09c23e3	Bistro	48.852930	2.353724	487	great
98	Les Agités	4f1086d0e4b0aabf16bdfc5c	Bar	48.860007	2.349531	17	poor
99	L'Imprévu Café	4bb5f0beef159c74bc3075f7	Bar	48.859468	2.349593	92	great
4							<b>&gt;</b>

```
In [29]: # creating a table for visualizing
         to_onehot = pd.get_dummies(to_venues[['categories_new', 'total likes_cat']], p
         refix="", prefix sep="")
         # add neighborhood column back to dataframe
         to_onehot['Name'] = to_venues['name']
         # move neighborhood column to the first column
         fixed_columns = [to_onehot.columns[-1]] + list(to_onehot.columns[:-1])
         to_onehot = to_onehot[fixed_columns]
         to_onehot.head(12)
```

#### Out[29]:

	Name	american food	bars	italian food	other	avg avg	below avg	great	poor
0	Place de l'Hôtel de Ville – Esplanade de la Li	0	0	0	0	0	0	1	0
2	Berges de Seine – Rive droite	0	0	0	0	0	0	0	1
3	L'Alsacien	0	0	0	0	1	0	0	0
4	BHV Marais	0	0	0	0	0	0	1	0
5	Paris Rendez-Vous	0	0	0	0	0	0	0	1
6	Maison Aleph	0	0	0	0	0	0	0	1
8	Häagen-Dazs	0	0	0	1	0	1	0	0
9	Tour Saint-Jacques	0	0	0	0	0	0	1	0
11	Galerie Azzedine Alaïa	0	0	0	0	0	1	0	0
12	Fleux'	0	0	0	0	0	0	1	0
13	Yummy and Guiltfree	0	0	0	0	0	0	0	1
14	Hotel Duo Paris	0	0	0	0	0	1	0	0

```
In [30]: # creating clusters from the dataframe
         cluster_df = to_onehot.drop('Name', axis=1)
         k clusters = 4
         # run k-means clustering
         kmeans = KMeans(n clusters=k clusters, random state=0).fit(cluster df)
         # check cluster labels generated for each row in the dataframe
         kmeans.labels [0:15]
```

```
Out[30]: array([2, 1, 3, 2, 1, 1, 0, 2, 0, 2, 1, 0, 3, 2, 2])
```

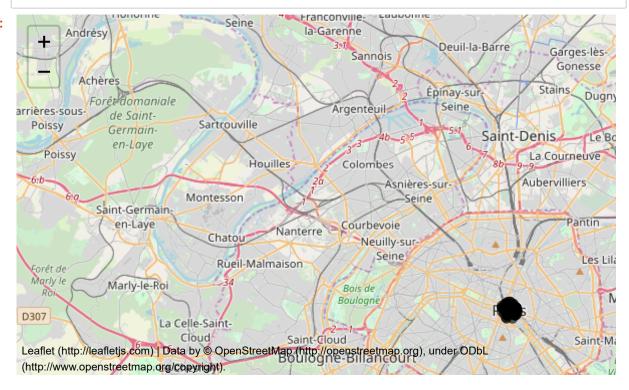
In [31]: to\_venues['label'] = kmeans.labels\_
to\_venues.head(12)

## Out[31]:

	name	id	categories	lat	Ing	total likes	total likes_cat	cate
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412	593	great	
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289	12	poor	
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381	46	avg avg	
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633	1115	great	
5	Paris Rendez- Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914	15	poor	
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873	21	poor	
8	Häagen- Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233	38	below avg	
9	Tour Saint- Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875	278	great	
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217	26	below avg	
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161	375	great	
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605	18	poor	
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937	31	below avg	
4								•

```
In [32]: # creating a Map of Paris
         map clusters = folium.Map(location=[latitude, longitude], zoom start=11)
         # set color scheme for the clusters
         x = np.arange(k_clusters)
         ys = [i+x+(i*x)**2  for i in range(k_clusters)]
         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(to_venues['lat'], to_venues['lng'], to_venue
         s['name'], to_venues['label']):
             label = folium.Popup(str(poi) + ' Cluster ' + str(cluster), parse_html=Tru
         e)
             folium.CircleMarker(
                  [lat, lon],
                  radius=5,
                  popup=label,
                  color='blue'[cluster-1],
                 fill=True,
                 fill_color='red'[cluster-1],
                 fill opacity=0.6).add to(map clusters)
         map_clusters
```

#### Out[32]:



In [33]: to\_venues.loc[to\_venues['label']==0]

Out[33]:

	name	id	categories	lat	Ing	total likes	total likes_cat
8	Häagen- Dazs	4cb2fc20db32f04d6da9d34d	Ice Cream Shop	48.854879	2.350233	38	below avg
11	Galerie Azzedine Alaïa	4c0bc2fdbbc676b018f64bd5	Art Gallery	48.857545	2.355217	26	below avg
14	Hotel Duo Paris	4e84bdeb2fb6611bdfd704ea	Hotel	48.858065	2.352937	31	below avg
24	Les Mauvais Garçons	4bc9d039937ca5937f57a692	Lyonese Bouchon	48.856829	2.355084	36	below avg
27	Bel Canto	4adcda12f964a520513621e3	French Restaurant	48.854632	2.354493	25	below avg
30	Au Verre Luisant	4b6c67bef964a52059372ce3	Gastropub	48.858512	2.351637	35	below avg
39	Galerie Sakura	536e2e04498e18340911a3c7	Art Gallery	48.857264	2.356032	39	below avg
44	Grizzli Café	4b0c29bff964a520203823e3	French Restaurant	48.858598	2.350000	36	below avg
63	Nature & Découvertes	5655b34d498e3696027cc6e8	Miscellaneous Shop	48.858249	2.356163	33	below avg
73	Le Mistral	4bea9cef62c0c928fbfee0d4	French Restaurant	48.857134	2.347638	43	below avg
87	Pozzetto	5264a08c11d2134d3e546b2c	Italian Restaurant	48.856774	2.356964	38	below avg
88	Place Igor Stravinsky	4e84316de5fab91d1ab4de68	Plaza	48.859754	2.351608	33	below avg
91	Sergeant Paper	4d79108e0ddba35dfac24a76	Art Gallery	48.860665	2.350435	31	below avg
4							<b>•</b>

First Cluster label 0 from the dataframe

In [34]: to\_venues.loc[to\_venues['label']==1]

## Out[34]:

	name	id	categories	lat	Ing	total likes	total likes_cat
2	Berges de Seine – Rive droite	58d800df9435a979b8a645fa	Pedestrian Plaza	48.855131	2.352289	12	poor
5	Paris Rendez- Vous	5361075a498ea34171cb06ca	Souvenir Shop	48.856951	2.352914	15	poor
6	Maison Aleph	59247f4e0d2be70573edd834	Pastry Shop	48.857348	2.354873	21	poor
13	Yummy and Guiltfree	5901dcce5d891b426af3e948	Gluten-free Restaurant	48.857516	2.352605	18	poor
22	Galerie Art Génération	4b7e7eabf964a52079ef2fe3	Art Gallery	48.858333	2.352194	9	poor
26	Sephora Flash	5624f608498e8ec2bac61cce	Perfume Shop	48.857499	2.352096	8	poor
41	La Glacerie	5b2e4d6df79faa002cccc2a5	Ice Cream Shop	48.858266	2.353173	10	poor
43	Amorino	5b81a899249623002cbde2b3	Ice Cream Shop	48.854110	2.349764	5	poor
47	Tasca	5325cbc8498e56006d2a8a77	Portuguese Restaurant	48.856686	2.356374	19	poor
49	Galerie 88	4adcda04f964a520403221e3	Tea Room	48.854930	2.353650	11	poor
59	Lot Of Wine	510d12a8e4b03bf82f0cf202	Wine Bar	48.854299	2.355268	22	poor
62	Les Dessous d'Apollon	4c499f609e3e2d7f26800449	Lingerie Store	48.857477	2.355545	19	poor
64	Archive 18-20	563635e4498efa9960dc2ee7	Furniture / Home Store	48.857794	2.355162	22	poor
66	Le Céleste Gourmand	4bae719df964a5202cb33be3	Chinese Restaurant	48.857566	2.350047	19	poor
69	She's Cake	562ba4a4498e640cb2b15e14	Cupcake Shop	48.856791	2.356526	14	poor
72	Place Baudoyer	4adcda0ef964a5203c3521e3	Plaza	48.856264	2.355422	15	poor
76	Luminor Hôtel de Ville	547b457b498e8d78ee354feb	Indie Movie Theater	48.858654	2.353498	13	poor
78	Les Foodies	57726d6a498e0bc923087c7d	Bistro	48.858308	2.354662	10	poor
81	Melodies graphiques	4e413b1f2271a89dd08ad91e	Arts & Crafts Store	48.855054	2.355579	6	poor
82	Edwart Chocolatier	543aa57b498e6f51e6bfff25	Chocolate Shop	48.856846	2.356593	16	poor
86	Crêperie Beaubourg	581cec3e4ed61041c1816763	Creperie	48.859348	2.351439	23	poor
90	Hôtel Caron de Beaumarchais	4adcd9fff964a520993021e3	Hotel	48.856448	2.356729	20	poor

	name	id	categories	lat	Ing	total likes	total likes_cat
95	Meating Corner	5a1ea646b9ac382318bd8654	Burger Joint	48.859205	2.349764	7	poor
96	L'Horloge du Palais de la Cité	519a24a8498e55ea1824b30a	Historic Site	48.856139	2.346155	8	poor
98	Les Agités	4f1086d0e4b0aabf16bdfc5c	Bar	48.860007	2.349531	17	poor
4							<b>&gt;</b>

second cluster label 1 from the dataframe

In [35]: to\_venues.loc[to\_venues['label']==2]

## Out[35]:

	name	id	categories	lat	Ing	total likes	total likes_cat	Ci
0	Place de l'Hôtel de Ville – Esplanade de la Li	4bf41231e5eba59334341f90	Plaza	48.856925	2.351412	593	great	
4	BHV Marais	4b4b6a3df964a520b89a26e3	Department Store	48.857312	2.353633	1115	great	
9	Tour Saint- Jacques	4b5c7d1ff964a5205f3229e3	Historic Site	48.858031	2.348875	278	great	
12	Fleux'	4b533b45f964a520509327e3	Furniture / Home Store	48.858763	2.354161	375	great	
16	BHV Marais – L'Homme	4be150de0365c9b6bc4cb338	Men's Store	48.857752	2.353908	195	great	
17	Le Perchoir du Marais	53aaac02498e602fdceec750	Cocktail Bar	48.857189	2.353642	147	great	
28	Fontaine Stravinsky	4cca7e73c4d06dcbb72d6303	Fountain	48.859578	2.351555	109	great	
29	Le Peloton Café	5618ca93498e8d9df7d0b582	Coffee Shop	48.855505	2.356034	123	great	
31	Le Cox	4b23dd27f964a5207c5b24e3	Gay Bar	48.858148	2.354887	108	great	
33	Marché aux fleurs Reine Elizabeth II	4bc836e514d7952121a868e9	Flower Shop	48.855326	2.347407	136	great	
36	Pozzetto	4bc9bde0b6c49c74fada8e91	Ice Cream Shop	48.856827	2.356269	179	great	
37	Place du Châtelet	4b7d977ef964a5209fc82fe3	Plaza	48.857714	2.347504	244	great	
38	Comme à Lisbonne	4e0757e96284d9ee92d4b1ca	Café	48.856767	2.356462	191	great	
42	Benedict	5293ae7d11d2fba382d9f652	French Restaurant	48.858208	2.356081	505	great	
48	Cathédrale Notre-Dame de Paris	4adcda09f964a520e83321e3	Church	48.853124	2.349561	8581	great	
50	Who's	4e6bb58cd4c01ce0181d014f	Cocktail Bar	48.859490	2.352669	120	great	
51	Les Pinces	5471c7d5498e7ddb1b9178ff	Seafood Restaurant	48.857552	2.356318	119	great	
52	Mariage Frères	4adcda04f964a520373221e3	Tea Room	48.857769	2.356618	210	great	
54	Pierre Hermé	51dbf0ce498e1372cbaf23ed	Pastry Shop	48.858127	2.356442	160	great	
55	Duc des Lombards	4adcda08f964a520ab3321e3	Jazz Club	48.859617	2.348627	108	great	
56	Une Glace à Paris	557f15bb498ea14854ab0f79	Ice Cream Shop	48.858162	2.356351	109	great	

	name	id	categories	lat	Ing	total likes	total likes_cat	Ci
58	L'Ébouillanté	4b6eab67f964a52002c62ce3	French Restaurant	48.854861	2.355162	83	great	
60	Lizard Lounge	4adcda05f964a520603221e3	Pub	48.857367	2.356160	124	great	
61	Pamela Popo	4db07d97fa8ca4b3e9e2caca	French Restaurant	48.855749	2.356919	100	great	
65	Comptoir Gourmet	512534ece4b03a94f9a50313	Restaurant	48.859958	2.354374	128	great	
71	Théâtre du Châtelet	4b8ebd9df964a5203c3433e3	Theater	48.857775	2.346265	228	great	
75	Tours de la Cathédrale Notre-Dame de Paris	4e96e6a7f79068de88dd5eaf	Scenic Lookout	48.853230	2.349207	89	great	
79	La Caféothèque de Paris	4bbb21a91261d13aa847eb98	Coffee Shop	48.854197	2.355714	453	great	
84	Centre Pompidou – Musée National d'Art Moderne	4adcda0af964a520623421e3	Art Museum	48.860730	2.351660	5360	great	
85	Black Dog	4b7d9398f964a520bcc72fe3	Pub	48.859408	2.349143	88	great	
92	Les Piétons	4bc9dd020687ef3b719cdacc	Tapas Restaurant	48.859120	2.349917	139	great	
94	Le Dernier Bar avant la Fin du Monde	4fd21c85e4b08315f264bdd5	Bar	48.857971	2.346152	485	great	
97	Le Saint- Régis	4b1411c6f964a520c09c23e3	Bistro	48.852930	2.353724	487	great	
99	L'Imprévu Café	4bb5f0beef159c74bc3075f7	Bar	48.859468	2.349593	92	great	
4								•

Third cluster label 2 form the dataframe

In [36]: to\_venues.loc[to\_venues['label']==3]

Out[36]:

	name	id	categories	lat	Ing	total likes	total likes_cat	cate
3	L'Alsacien	54351b59498e123ee4afc7ff	Alsatian Restaurant	48.858275	2.350381	46	avg avg	
15	Théâtre de la Ville	4adcda15f964a520a13721e3	Theater	48.857239	2.347911	76	avg avg	
18	Bagel Baget Cafe	53d13101498e918e659f88a2	Bagel Shop	48.858794	2.350769	46	avg avg	
19	Yogurt Factory	4ff07da4e4b0b61f2a827eb3	Frozen Yogurt Shop	48.859083	2.353587	64	avg avg	
20	Au Vieux Paris d'Arcole	4b9ea5cdf964a52094f636e3	French Restaurant	48.854196	2.350312	62	avg avg	
23	Au Bougnat	4c61c047eb82d13afac003d6	Auvergne Restaurant	48.854302	2.350065	47	avg avg	
25	Les Souffleurs	4b72fb3ff964a520ba932de3	Gay Bar	48.857070	2.355101	66	avg avg	
34	Kilo Shop	4fa57583e4b00f71952b8dba	Clothing Store	48.858151	2.352096	65	avg avg	
40	Benoit Paris	4bd6e79c6798ef3b31ca658d	French Restaurant	48.858428	2.350068	74	avg avg	
53	Résistance	555fa507498efe354e7b7f53	Cocktail Bar	48.858042	2.356651	52	avg avg	
57	Grand Cœur	556990cc498e61c8e37e69ce	Restaurant	48.859737	2.353591	55	avg avg	aı
83	Boutique du Centre Pompidou	5113ebbce4b0d3c1022aef14	Souvenir Shop	48.860706	2.352362	62	avg avg	
89	Mémorial de la Shoah	4ae4549cf964a520039a21e3	Memorial Site	48.854826	2.356254	53	avg avg	
93	Au Vieux Comptoir	4b27effef964a5209a8c24e3	French Restaurant	48.858893	2.346129	70	avg avg	
4								•

Fourth cluster label 3 from the dataframe

# Conclusion

Label 0 are the below average like places, label 3 are above average like places, label 2 are great places, and the poor like places is label 1.

From the third cluster. This represents the venues as great group with most like. Cathedrale Notre-dame de Paris has the most likes of 8581, followed by Centre Pompidou-Musee National d'Art Moderne with 5360 like, and then by BHV Merais with 1115 likes.

Also, second cluster representing the poor venus with the least likes, Creperie Beaubourg has the most of 23 likes, Archive and Lot of Wine with 22 likes each while Amorino has the leat likes of 5.

Below aerage group is First cluster. The venue with the most likes is Le Mistral with 43 likes then Galerie Sakura with 39 likes and Haagen-Dazs and Pozzetto with 38 likes each.

Finnaly the fourth cluster is the above average group. Theatre de la Ville has 76 likes, Benoit Paris with 74 like while Au Vieux Comptoir with 70 likes representing the top 3 Venues with most likes in the group.