1. Importing the libraries

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
import plotly.io as pio
```

2.dataset

In [2]:
```
Dataset=pd.read_csv('Zomato_chennai_Dataset.csv')
```

In [3]:
```
Dataset.head()
```

Out[3]:

	Zomato URL	Name of Restaurant	Address	Location	Cuisine	Top Dishes	Price for 2	Dining Rating	Dining Rating Count	Delivery Rating	Delivery Rating Count	Features
0	https://www.zomato.com/chennai/yaa-mohaideen-b...	Yaa Mohaideen Briyani	336 & 338, Main Road, Pallavaram, Chennai	Pallavaram	['Biryani']	['Bread Halwa', ' Chicken 65', ' Mutton Biryan...	500.0	4.3	1500	4.3	9306	['Home Delivery', 'Indoor Seating']
1	https://www.zomato.com/chennai/sukkubhai-biriy...	Sukkubhai Biriyani	New 14, Old 11/3Q, Railway Station Road, MKN ...	Alandur	['Biryani', ' North Indian', ' Mughlai', ' Des...	['Beef Biryani', ' Beef Fry', ' Paratha', ' Pa...	1000.0	4.4	3059	4.1	39200	['Home Delivery', 'Free Parking', 'Table booki...
2	https://www.zomato.com/chennai/ss-hyderabad-bi...	SS Hyderabad Biryani	98/339, Arcot Road, Opposite Gokulam Chit Fun...	Kodambakkam	['Biryani', ' North Indian', ' Chinese', ' Ara...	['Brinjal Curry', ' Tandoori Chicken', ' Chick...	500.0	4.3	1361	4.4	10500	['Home Delivery', 'Indoor Seating']
3	https://www.zomato.com/chennai/kfc-perambur	KFC	10, Periyar Nagar, 70 Feet Road, Near Sheeba ...	Perambur	['Burger', ' Fast Food', ' Finger Food', ' Bev...	['Zinger Burger']	500.0	4.0	1101	4.0	11200	['Home Delivery', 'Free Parking', 'Card Upon D...
4	https://www.zomato.com/chennai/tasty-kitchen-p...	Tasty Kitchen	135B, SRP Colony, Peravallur, Near Perambur, ...	Perambur	['Chinese', ' Biryani', ' North Indian', ' Che...	['Mutton Biryani', ' Chicken Rice', ' Tomato R...	450.0	4.2	617	4.1	22400	['Home Delivery', 'Indoor Seating']

3.Information About Dataset

In [4]:
```
Dataset.shape
```

Out[4]:
```
(12032, 12)
```

In [5]:
```
Dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12032 entries, 0 to 12031
Data columns (total 12 columns):
Zomato URL              12032 non-null object
Name of Restaurant      12032 non-null object
Address                 12032 non-null object
Location                12032 non-null object
Cuisine                 12032 non-null object
Top Dishes              12032 non-null object
Price for 2             12032 non-null float64
Dining Rating           12032 non-null object
Dining Rating Count     12032 non-null object
Delivery Rating         12032 non-null object
Delivery Rating Count   12032 non-null object
Features                12032 non-null object
dtypes: float64(1), object(11)
memory usage: 1.1+ MB
```

4.Data cleaning

In [6]:
```
# Remove the columns address and Zomato URL is not wanted
Dataset.drop(['Address', 'Zomato URL'], axis = 1, inplace = True)
```

In [7]:
```
# And describe the Category data
Dataset[['Name of Restaurant', 'Location', 'Cuisine',
       'Top Dishes', 'Dining Rating', 'Dining Rating Count',
       'Delivery Rating', 'Delivery Rating Count', 'Features']].describe()
```

Out[7]:

	Name of Restaurant	Location	Cuisine	Top Dishes	Dining Rating	Dining Rating Count	Delivery Rating	Delivery Rating Count	Features
count	12032	12032	12032	12032	12032	12032	12032	12032	12032
unique	8369	268	2423	2190	35	794	33	2282	1554
top	Amma Unavagam	Porur	['South Indian']	Invalid	None	Does not offer Dining	None	Not enough Delivery Reviews	['Home Delivery', 'Indoor Seating']
freq	78	418	883	9641	5351	2603	5851	3379	2447

In [8]:
```
# show the unique data in Delivery Rating Count
Dataset['Delivery Rating Count'].value_counts()
```

Out[8]:
```
Not enough Delivery Reviews    3379
Does not offer Delivery        2252
None                            220
27                               34
60                               30
                               ...
4575                              1
407                               1
5086                              1
1828                              1
1310                              1
Name: Delivery Rating Count, Length: 2282, dtype: int64
```

In [9]:
```
# replace the Delivery Rating Count data for Not enough Delivery Reviews', 'Does not offer Delivery' and 'None' put 0
Dataset['Delivery Rating Count'].replace(to_replace = ['Not enough Delivery Reviews', 'Does not offer Delivery', 'None'], value =
```

In [10]:
```
# after replace the Delivery Rating Count data
Dataset['Delivery Rating Count'].value_counts()
```

Out[10]:
```
0       5870
27        34
22        30
32        30
40        30
        ...
407        1
5086       1
1828       1
3810       1
1310       1
Name: Delivery Rating Count, Length: 2279, dtype: int64
```

In [11]:
```
# some hotel are not provide the Dining table so, replace value
Dataset.replace(to_replace = ['None', 'Does not offer Dining', 'Not enough Dining Reviews'], value ='Not provide Dining',inplace=
```

In [12]:
```
# see the Unique Top Dishes
Dataset['Top Dishes'].value_counts()
```

Out[12]:
```
Invalid                                                                  9641
['Biryani']                                                                30
['Coffee']                                                                 14
['Chicken Biryani']                                                        12
['Pizza', ' Garlic Bread']                                                 11
                                                                         ...
['Vada Pav', ' Chaat', ' Panipuri Shots', ' Maggi', ' Bhel Puri', ' Sandwich', ' Waffles']     1
['Mutton Biryani', ' Buttermilk', ' Fish']                                 1
['Chicken Biryani', ' Mutton Biryani', ' Crunchy Chicken', ' Pizza', ' Tomato Rice']           1
['Lunch Buffet', ' Fish', ' Pasta', ' Salad']                              1
['Sandwich', ' Salad']                                                     1
Name: Top Dishes, Length: 2190, dtype: int64
```

In [13]:
```
# Most of the Top Dishes is Invalid so, change the Favourite Dishe. common for all the peoples
Dataset['Top Dishes'].replace(to_replace = 'Invalid', value = 'Favourite Dishe', inplace = True)
```

In [14]:
```
# after the replace the data
Dataset['Top Dishes'].value_counts()
```

Out[14]:
```
Favourite Dishe                                                                    9641
['Biryani']                                                                          30
['Coffee']                                                                           14
['Chicken Biryani']                                                                  12
['Sandwich']                                                                         11
                                                                                   ...
['Vada Pav', ' Chaat', ' Panipuri Shots', ' Maggi', ' Bhel Puri', ' Sandwich', ' Waffles']      1
['Mutton Biryani', ' Buttermilk', ' Fish']                                           1
['Chicken Biryani', ' Mutton Biryani', ' Crunchy Chicken', ' Pizza', ' Tomato Rice']     1
['Lunch Buffet', ' Fish', ' Pasta', ' Salad']                                        1
['Sandwich', ' Salad']                                                               1
Name: Top Dishes, Length: 2190, dtype: int64
```

Location

In [15]:
```
# see the unique Location data
Dataset["Location"].value_counts()
```

Out[15]:
```
Porur                                                418
Velachery                                            372
Ambattur                                             334
T. Nagar                                             315
Perungudi                                            288
                                                    ...
Liberty Park Hotel, Kodambakkam                        1
 InterContinental Chennai Mahabalipuram Resort, East...     1
Hotel Maurya International, Vadapalani                 1
Hotel Sathyam Grand Resort, Kanchipuram District       1
Radisson Blu, Egmore                                   1
Name: Location, Length: 268, dtype: int64
```

In [16]:
```
# Replacing Small regions with Known region name
detectCommaSymbol = Dataset[Dataset['Location'].str.find(",") != -1]['Location']
for x in detectCommaSymbol:
    valSplit = x.split(',')
    Dataset['Location'].replace(to_replace = x, value = " ".join(valSplit[1].split()), inplace = True)
```

In [17]:
```
# after replaced
Dataset['Location'].value_counts()
```

Out[17]:
```
Porur                                  421
Velachery                              421
Ambattur                               361
T. Nagar                               335
Perungudi                              288
                                      ...
Sriperumbudur                            2
Holiday Inn Chennai OMR IT Expressway    2
Citadines                                2
The Slate                                1
East...                                  1
Name: Location, Length: 129, dtype: int64
```

5. preprocessing the Dataset

In [18]:
```
Dataset.isnull().sum()
```

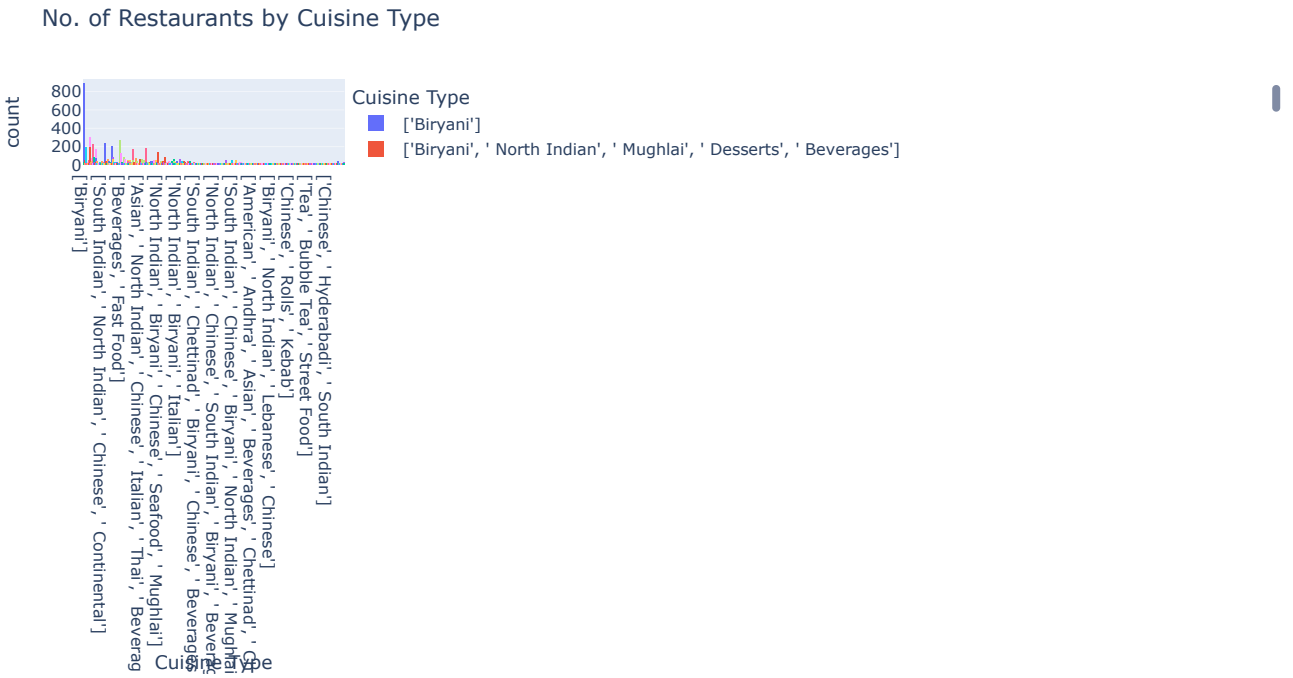
Out[18]:
```
Name of Restaurant      0
Location                0
Cuisine                 0
Top Dishes              0
Price for 2             0
Dining Rating           0
Dining Rating Count     0
Delivery Rating         0
Delivery Rating Count   0
Features                0
dtype: int64
```

In [19]:
```
# final data set cleaning
Dataset.to_csv('PreProcessing Zomato Chennai.csv', index=False,header=True)
```

Exploratory Data Analysis

1.How many restaurants are in Chennai for each type of cuisine?

In [20]:
```
fig = px.histogram(Dataset, x='Cuisine', color='Cuisine',
 title= 'No. of Restaurants by Cuisine Type',
 labels={'Cuisine':'Cuisine Type'})
fig.show()
```



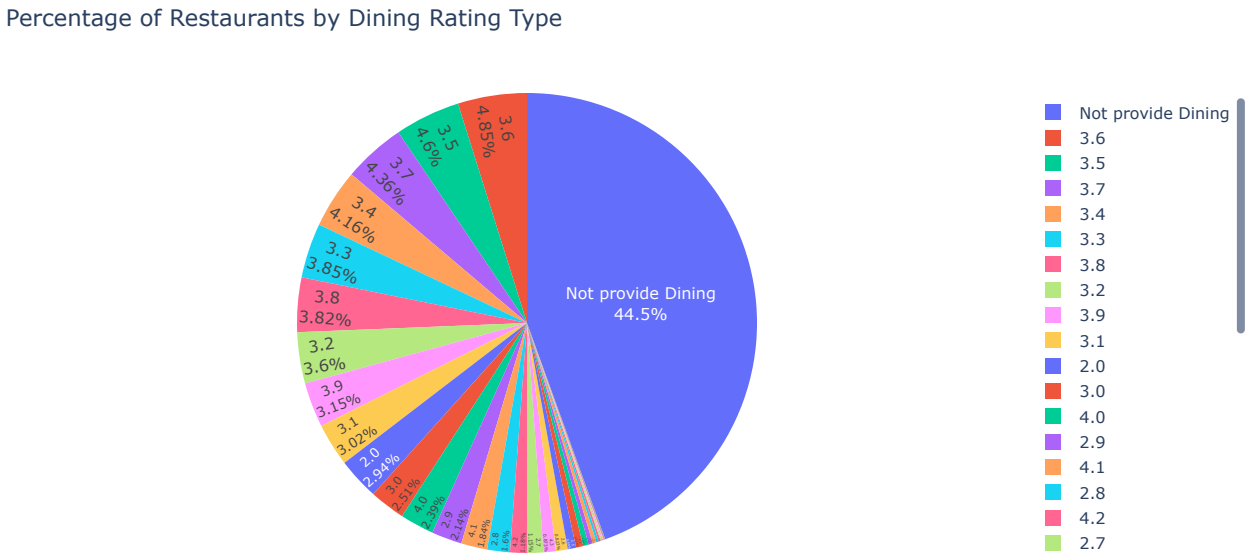
2.What are the percentage of restaurants by Dinning Rating Type in Chennai?

In [21]:
```
rating_type_df = Dataset['Dining Rating'].value_counts().reset_index()
rating_type_df.rename(columns={'index':'Dining Rating', 'Dining Rating':'COUNT OF RESTAURANTS'}, inplace=True)
rating_type_df
```

Out[21]:

	Dining Rating	COUNT OF RESTAURANTS
0	Not provide Dining	5351
1	3.6	584
2	3.5	553
3	3.7	525
4	3.4	500
5	3.3	463
6	3.8	460
7	3.2	433
8	3.9	379
9	3.1	363
10	2.0	354
11	3.0	302
12	4.0	288
13	2.9	257
14	4.1	221
15	2.8	192
16	4.2	142
17	2.7	138
18	4.3	105
19	2.6	99
20	2.5	71
21	4.4	61
22	2.4	46
23	4.5	36
24	2.3	32
25	2.2	20
26	4.6	17
27	4.7	12
28	2.1	10
29	4.9	7
30	4.8	4
31	1.9	3
32	1.7	2
33	0.3	1
34	1.0	1

In [22]:
```
fig = px.pie(rating_type_df, names='Dining Rating', values='COUNT OF RESTAURANTS', color='Dining Rating',
 title='Percentage of Restaurants by Dining Rating Type').update_traces(textposition='inside', textinfo='percent+label')
fig.show()
```



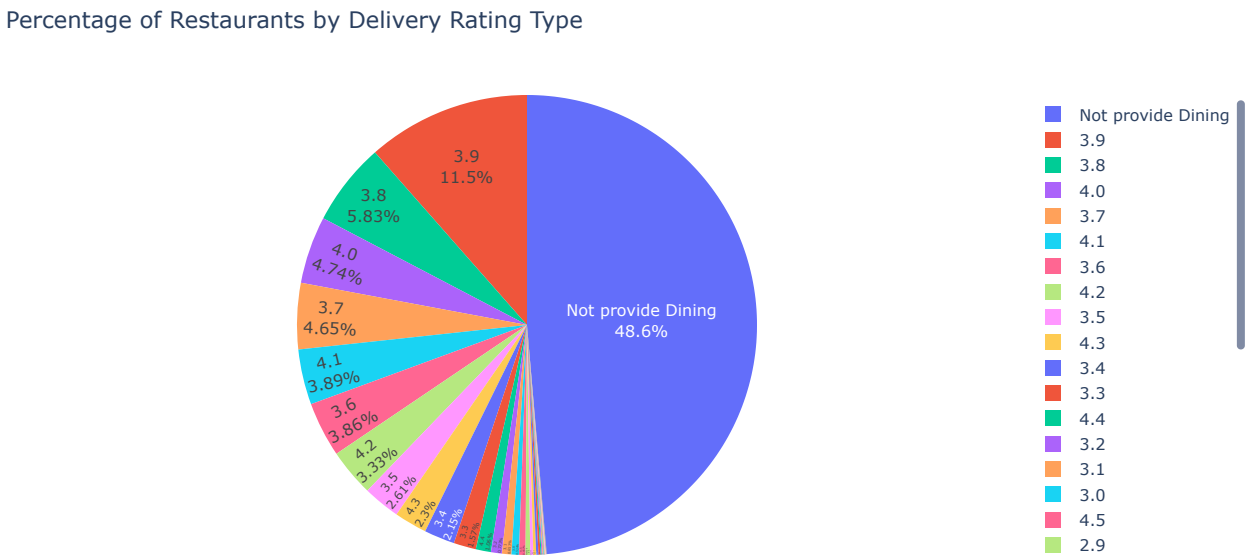
3.What are the percentage of restaurants by Delivery Rating Type in Chennai?

In [23]:
```
rating_type_df = Dataset['Delivery Rating'].value_counts().reset_index()
rating_type_df.rename(columns={'index':'Delivery Rating', 'Delivery Rating':'COUNT OF RESTAURANTS'}, inplace=True)
rating_type_df
```

Out[23]:

	Delivery Rating	COUNT OF RESTAURANTS
0	Not provide Dining	5851
1	3.9	1383
2	3.8	701
3	4.0	570
4	3.7	559
5	4.1	468
6	3.6	465
7	4.2	401
8	3.5	314
9	4.3	277
10	3.4	259
11	3.3	189
12	4.4	128
13	3.2	93
14	3.1	79
15	3.0	63
16	4.5	55
17	2.9	39
18	2.8	26
19	4.6	24
20	2.7	19
21	2.6	17
22	2.5	9
23	0.3	8
24	2.4	7
25	2.2	5
26	2.0	5
27	2.3	5
28	1.8	5
29	4.7	4
30	2.1	2
31	1.5	1
32	1.6	1

In [24]:
```
fig = px.pie(rating_type_df, names='Delivery Rating', values='COUNT OF RESTAURANTS', color='Delivery Rating',
 title='Percentage of Restaurants by Delivery Rating Type').update_traces(textposition='inside', textinfo='percent+label')
fig.show()
```



4.Which are the Top 10 highest rated Seafood Restaurant in Chennai?

In [25]:
```
seafood_df = Dataset[Dataset['Cuisine'].str.contains('Seafood')]
seafood_df.sort_values(by='Delivery Rating',ascending=False).head(10)
```

Out[25]:

	Name of Restaurant	Location	Cuisine	Top Dishes	Price for 2	Dining Rating	Dining Rating Count	Delivery Rating	Delivery Rating Count	Features
10226	Aazhi - The Sea Food Mess	Karapakkam	['South Indian', ' Chettinad', ' Seafood']	Favourite Dishe	800.0	Not provide Dining	Not provide Dining	Not provide Dining	0	['Home Delivery', 'Indoor Seating']
2783	Dindugal Thalapakattu	Thuraipakkam	['Chinese', ' Seafood', ' North Indian']	Favourite Dishe	400.0	3.6	29	Not provide Dining	0	['Indoor Seating']
5693	Zahoor Briyani & Fast Food Centre	Egmore	['Biryani', ' Chinese', ' North Indian', ' Sea...	Favourite Dishe	400.0	3.2	6	Not provide Dining	0	['Indoor Seating']
5647	Al Taj Family Restaurant	Vandalur	['Biryani', ' Chinese', ' North Indian', ' Sea...	Favourite Dishe	350.0	Not provide Dining	Not provide Dining	Not provide Dining	0	['Breakfast', 'Home Delivery', 'Indoor Seating']
5632	The Food Club	Muttukadu	['North Indian', ' Chinese', ' Seafood', ' Bir...	Favourite Dishe	500.0	Not provide Dining	Not provide Dining	Not provide Dining	0	['Home Delivery', 'Indoor Seating', 'Table boo...
5577	Mass Restaurant	Koyambedu	['North Indian', ' Chinese', ' Seafood']	Favourite Dishe	450.0	Not provide Dining	Not provide Dining	Not provide Dining	0	['Home Delivery', 'Indoor Seating']
1434	Samudra - Trident	GST Road	['Seafood', ' South Indian', ' Chettinad', ' M...	['Calamari', ' Fish']	3000.0	3.3	63	Not provide Dining	0	['Wheelchair Accessible', 'Full Bar Available'...
5491	Meenveedu	Semmancheri	['Seafood']	Favourite Dishe	500.0	Not provide Dining	Not provide Dining	Not provide Dining	0	['Delivery Only']
1489	Searock Restaurant	Mahabalipuram	['North Indian', ' Fast Food', ' Seafood', ' C...	Favourite Dishe	800.0	4.0	73	Not provide Dining	0	['Home Delivery', 'Indoor Seating', 'Table boo...
5407	7 Grills	Triplicane	['North Indian', ' Mughlai', ' Seafood', ' Chi...	Favourite Dishe	1000.0	3.7	5	Not provide Dining	0	['Home Delivery', 'Indoor Seating', 'Buffet']

5.Which places have the highest rated restaurant for each Cuisine Type in chennai?

In [26]:
```
 #Checking for text values in the column before converting it to numeric datatype
Dataset['Dining Rating'].value_counts()
```

Out[26]:
```
Not provide Dining    5351
3.6                    584
3.5                    553
3.7                    525
3.4                    500
3.3                    463
3.8                    460
3.2                    433
3.9                    379
3.1                    363
2.0                    354
3.0                    302
4.0                    288
2.9                    257
4.1                    221
2.8                    192
4.2                    142
2.7                    138
4.3                    105
2.6                     99
2.5                     71
4.4                     61
2.4                     46
4.5                     36
2.3                     32
2.2                     20
4.6                     17
4.7                     12
2.1                     10
4.9                      7
4.8                      4
1.9                      3
1.7                      2
0.3                      1
1.0                      1
Name: Dining Rating, dtype: int64
```

In [27]:
```
# Replacing the text values with '0'
Dataset['Dining Rating'].replace(to_replace=['Not provide Dining'], value='0', inplace=True)
Dataset['Dining Rating'] = Dataset['Dining Rating'].astype('float64')
```

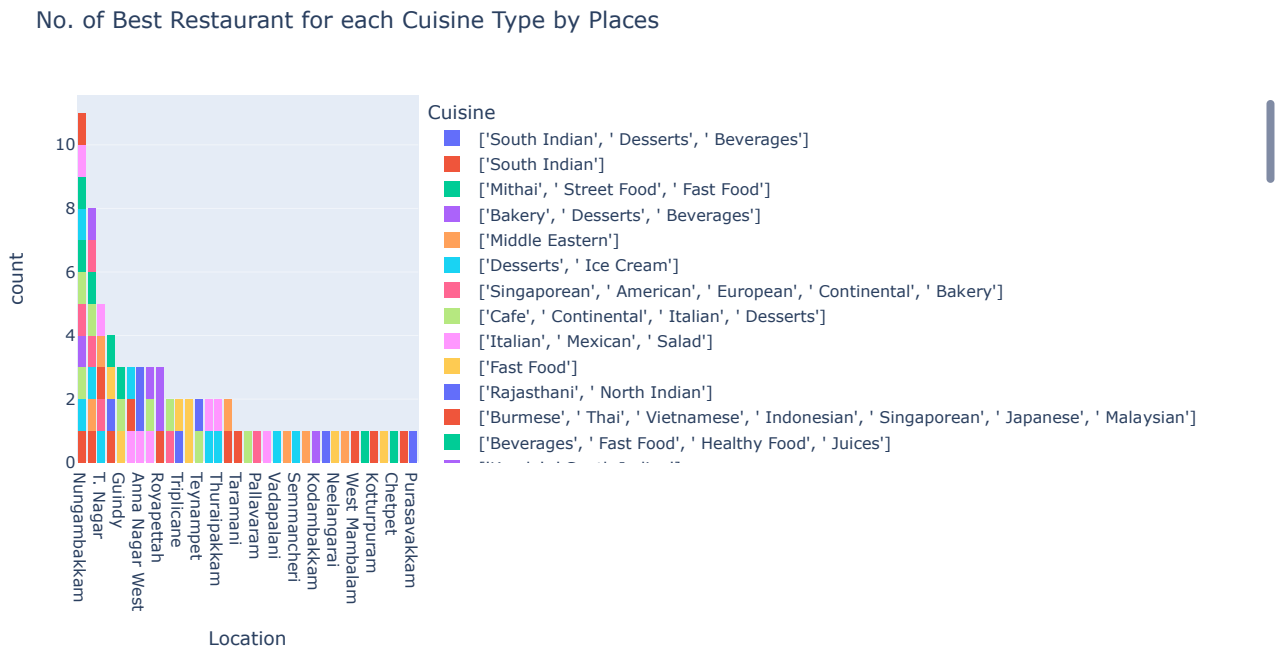
In [28]:
```
# Assuming restaurants having rating above 4.5
highest_rated_df = Dataset[Dataset['Dining Rating'] >= 4.5]
highest_rated_df
```

Out[28]:

	Name of Restaurant	Location	Cuisine	Top Dishes	Price for 2	Dining Rating	Dining Rating Count	Delivery Rating	Delivery Rating Count	Features
15	Welcome Hotel	Purasavakkam	['South Indian', ' Desserts', ' Beverages']	['Pongal', ' Podi Dosa', ' Idli Sambar', ' Vad...	300.0	4.5	1094	Not provide Dining	0	['Breakfast', 'Vegetarian Only', 'Indoor Seati...
24	Eating Circles	Alwarpet	['South Indian']	['Rose Milk', ' Neer Dosa', ' Thatte Idli', ' ...	250.0	4.7	782	4.2	2744	['Breakfast', 'Home Delivery', 'Vegetarian Onl...
37	Shree Mithai	Chetpet	['Mithai', ' Street Food', ' Fast Food']	['Chaat', ' Badam Milk', ' Pav Bhaji', ' Panip...	300.0	4.6	1085	4.4	18600	['Breakfast', 'Home Delivery', 'Vegetarian Onl...
50	Andhikkadai	Velachery	['South Indian']	['Coffee', ' Sweet Kozhukattai', ' Idli', ' Po...	200.0	4.6	908	4.2	17300	['Breakfast', 'Home Delivery', 'Vegetarian Onl...
57	Brownie Heaven	Royapettah	['Bakery', ' Desserts', ' Beverages']	['Vanilla Ice Cream', ' Brownie Shake', ' Filt...	350.0	4.9	842	4.3	2270	['Home Delivery', 'Indoor Seating', 'Desserts ...
...	...	...	...	...	...	...	...	...	...	...
9279	Gastronomer By Double Roti	Teynampet	['Cafe', ' American', ' Fast Food']	['Burgers', ' Fries', ' Oreo Shake', ' Healthy...	900.0	4.5	2341	4.2	2577	['Home Delivery', 'Indoor Seating', 'Wifi']
9358	Writer's Cafe	Taramani	['Cafe', ' American']	['Hot Chocolate', ' Pizza', ' Pasta', ' Waffle...	600.0	4.5	497	4.1	360	['Home Delivery', 'Indoor Seating', 'Table boo...
9363	Flower Drum	Adyar	['Chinese', ' Thai']	['Momos', ' Noodle', ' Dimsum Platter', ' Sche...	800.0	4.5	617	4.3	819	['Home Delivery', 'Wheelchair Accessible', 'Ve...
9367	Cream Stone	Thuraipakkam	['Desserts', ' Ice Cream']	['Death By Chocolate', ' Chocolava', ' Tiramis...	350.0	4.5	683	4.2	4553	['Home Delivery', 'Vegetarian Only', 'Indoor S...
9541	Bombay Kulfi	Anna Nagar East	['Ice Cream']	['Calcutta Paan', ' Tender Coconut Kulfi', ' P...	200.0	4.6	397	4.4	3468	['Home Delivery', 'Sugar Free Options', 'Free ...

76 rows × 10 columns

In [29]:
```
fig = px.histogram(highest_rated_df, x='Location', color='Cuisine',
 title= 'No. of Best Restaurant for each Cuisine Type by Places').update_xaxes(categoryorder="total descending")
fig.show()
```



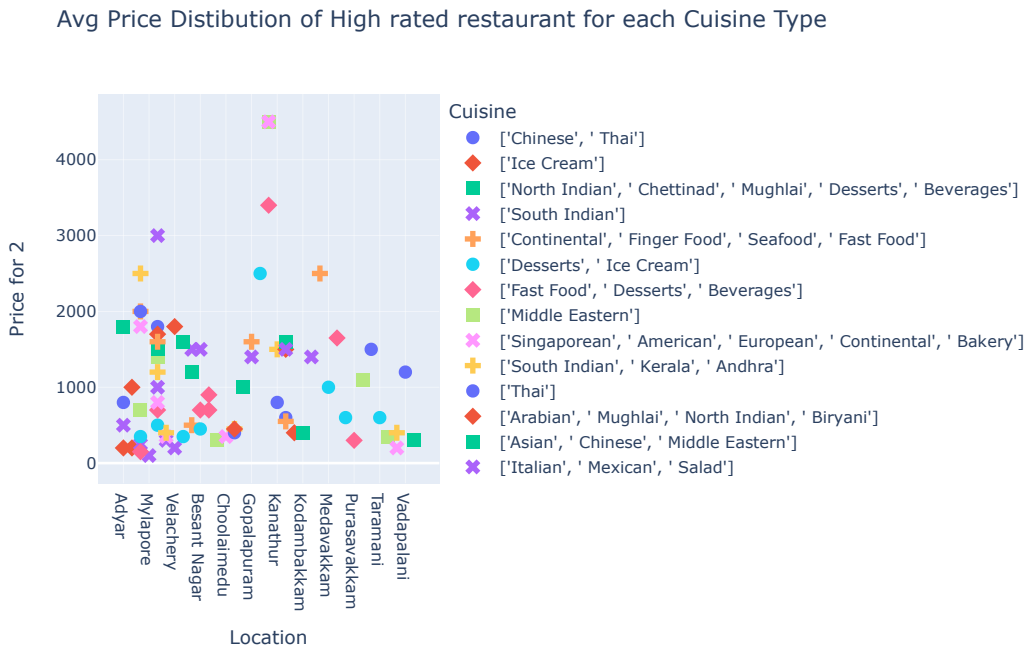
6.What is the Avg Price Distibution of highest rated restaurant for each Cuisine Type in Chennai?

In [30]:
```
highest_rated_price_df = highest_rated_df.groupby(by=['Location', 'Cuisine'])['Price for 2'].mean().reset_index()
highest_rated_price_df.head()
```

Out[30]:

	Location	Cuisine	Price for 2
0	Adyar	['Chinese', ' Thai']	800.0
1	Adyar	['Ice Cream']	200.0
2	Adyar	['North Indian', ' Chettinad', ' Mughlai', ' D...	1800.0
3	Adyar	['South Indian']	500.0
4	Alwarpet	['Continental', ' Finger Food', ' Seafood', ' ...	2000.0

In [31]:
```
fig = px.scatter(highest_rated_price_df, x="Location", y="Price for 2", color="Cuisine", symbol="Cuisine",
 title=' Avg Price Distibution of High rated restaurant for each Cuisine Type').update_traces(marker_size=10)
fig.show()
```



7.Which areas have a large number of Chinese Restaurant Market?

In [32]:
```
chinese_df = Dataset[Dataset['Cuisine'].str.contains('Chinese')]
chinese_df
```

Out[32]:

	Name of Restaurant	Location	Cuisine	Top Dishes	Price for 2	Dining Rating	Dining Rating Count	Delivery Rating	Delivery Rating Count	Features
2	SS Hyderabad Biryani	Kodambakkam	['Biryani', ' North Indian', ' Chinese', ' Ara...	['Brinjal Curry', ' Tandoori Chicken', ' Chick...	500.0	4.3	1361	4.4	10500	['Home Delivery', 'Indoor Seating']
4	Tasty Kitchen	Perambur	['Chinese', ' Biryani', ' North Indian', ' Che...	['Mutton Biryani', ' Chicken Rice', ' Tomato R...	450.0	4.2	617	4.1	22400	['Home Delivery', 'Indoor Seating']
5	Dine N Fun	Medavakkam	['South Indian', ' North Indian', ' Chinese']	['Chicken Grill', ' Shawarma', ' Naan', ' Chic...	450.0	4.1	567	3.8	24700	['Home Delivery', 'Indoor Seating']
8	Savoury Sea Shell	Anna Nagar East	['Arabian', ' Chinese', ' North Indian', ' Leb...	['Shawarma', ' Chicken Grill', ' Brownie', ' S...	1400.0	4.2	2564	4.1	21700	['Home Delivery', 'Indoor Seating', 'Card Upon...
9	Sangeetha Veg Restaurant	T. Nagar	['South Indian', ' North Indian', ' Chinese', ...	['Filtered Coffee', ' Chaat', ' Faluda', ' Mas...	800.0	4.4	1578	4.2	39600	['Breakfast', 'Home Delivery', 'Vegetarian Onl...
...	...	...	...	...	...	...	...	...	...	...
12014	Bowl Bazaar	Adyar	['North Indian', ' South Indian', ' Chinese', ...	Favourite Dishe	500.0	0.0	Not provide Dining	Not provide Dining	0	['Delivery Only']
12015	Bowl Bazaar	Medavakkam	['North Indian', ' South Indian', ' Chinese', ...	Favourite Dishe	500.0	0.0	Not provide Dining	Not provide Dining	0	['Delivery Only']
12016	Bowl Bazaar	Perungudi	['North Indian', ' South Indian', ' Chinese']	Favourite Dishe	400.0	0.0	Not provide Dining	Not provide Dining	0	['Delivery Only']
12017	Bowl Bazaar	Medavakkam	['North Indian', ' South Indian', ' Chinese']	Favourite Dishe	400.0	0.0	Not provide Dining	Not provide Dining	0	['Delivery Only']
12018	Bowl Bazaar	Ashok Nagar	['North Indian', ' South Indian', ' Chinese']	Favourite Dishe	400.0	0.0	Not provide Dining	Not provide Dining	0	['Delivery Only']

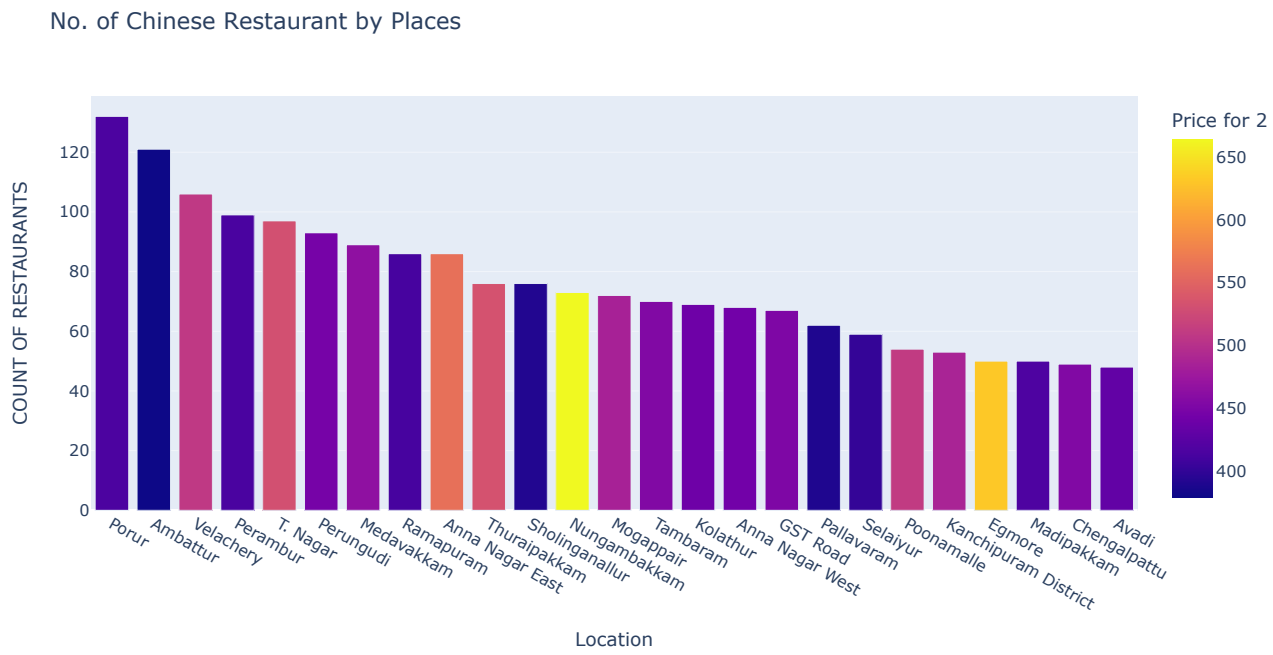
3571 rows × 10 columns

In [33]:
```
chinese_rest_df = chinese_df.groupby(by='Location').agg({'Name of Restaurant' : 'count', 'Price for 2' : 'mean'}).rename(columns=
chinese_rest_df = chinese_rest_df.sort_values('COUNT OF RESTAURANTS', ascending=False).head(25)
chinese_rest_df.head()
```

Out[33]:

	Location	COUNT OF RESTAURANTS	Price for 2
77	Porur	132	415.530303
5	Ambattur	121	379.338843
113	Velachery	106	508.490566
74	Perambur	99	413.636364
97	T. Nagar	97	530.412371

In [34]:
```
fig = px.bar(chinese_rest_df, x='Location', y='COUNT OF RESTAURANTS', color='Price for 2', title= 'No. of Chinese Restaurant by P
fig.show()
```



8.Is there a relation between Price and Rating by each Cuisine Type?

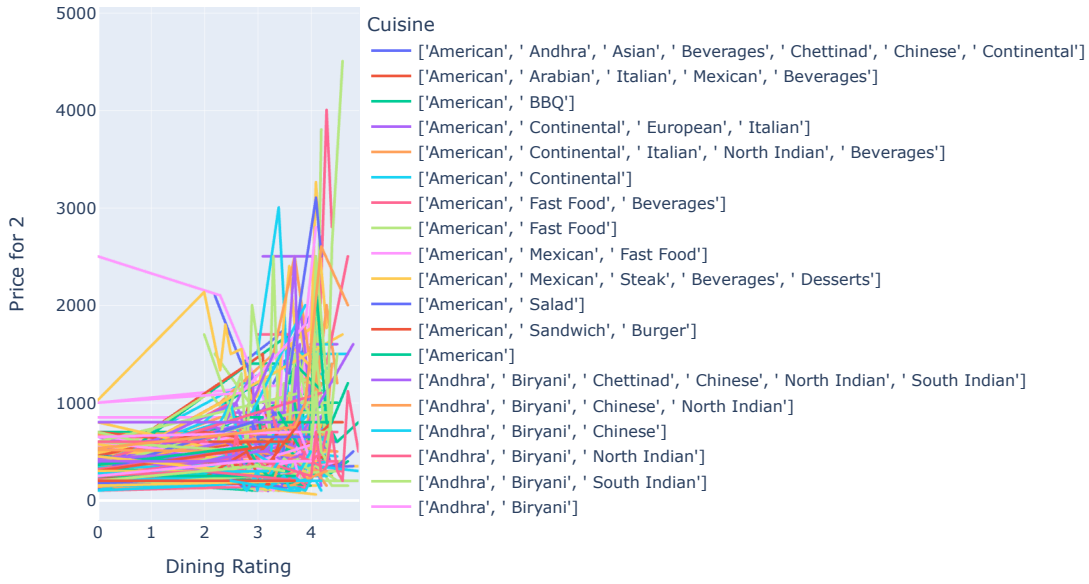
In [35]:
```
price_rating_df = Dataset.groupby(['Cuisine', 'Dining Rating'])['Price for 2'].mean().reset_index()
price_rating_df
```

Out[35]:

	Cuisine	Dining Rating	Price for 2
0	['American', ' Andhra', ' Asian', ' Beverages'...	2.4	800.0
1	['American', ' Arabian', ' Italian', ' Mexican...	0.0	150.0
2	['American', ' BBQ']	0.0	400.0
3	['American', ' Continental', ' European', ' It...	3.9	700.0
4	['American', ' Continental', ' Italian', ' Nor...	4.1	800.0
...	...	...	...
5049	['Tibetan', ' Momos']	4.0	400.0
5050	['Tibetan']	0.0	200.0
5051	['Turkish', ' Kebab']	4.3	500.0
5052	['Wraps', ' Fast Food']	0.0	300.0
5053	['Wraps']	0.0	150.0

5054 rows × 3 columns

In [36]:
```
fig = px.line(price_rating_df, y="Price for 2", x="Dining Rating",color='Cuisine')
fig.show()
```



9. Is there a relation between Region and Price?

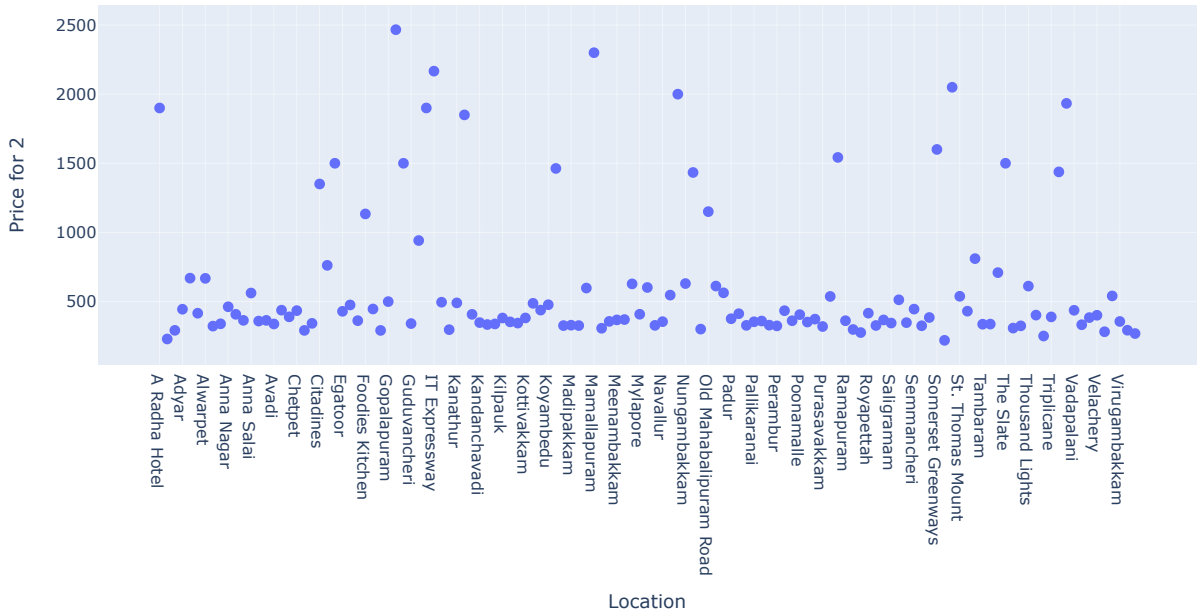
In [37]:
```
region_price_df = Dataset.groupby(['Location'])['Price for 2'].mean().reset_index()
region_price_df
```

Out[37]:

	Location	Price for 2
0	A Radha Hotel	1900.000000
1	Abhiramapuram	228.571429
2	Adambakkam	291.025641
3	Adyar	443.830846
4	Akkarai	668.750000
...	...	...
124	Vepery	280.952381
125	Vettuvankeni	540.000000
126	Virugambakkam	355.263158
127	Washermenpet	291.735537
128	West Mambalam	267.846154

129 rows × 2 columns

In [38]:
```
fig = px.scatter(region_price_df, x="Location", y="Price for 2").update_traces(marker_size=8)
fig.show()
```



10.Find the list of Affordable Restaurants?

1)Low Price 2) High Rated First step will be to find the restaurants with average cost 1/4th the average cost of most expensive restaurant in our dataframe. Let me explain:-The most expensive restaurant has an average meal cost= 6000. We'll try to stay economical and only pick the restaurants that are 1/4th of 6000.

In [39]:
```
max_price = Dataset['Price for 2'].max()
one_fourth_price = max_price/4
one_fourth_price
```

Out[39]: 1250.0

In [40]:
```
# Finding list of restaurants that have price less than and equal to 1/4th of the max price i.e Finding Cheap Restauran
aff_rest_df = Dataset[['Name of Restaurant', 'Price for 2', 'Cuisine', 'Location']]
aff_rest_df = aff_rest_df[aff_rest_df['Price for 2'] <= 1250]
aff_rest_df.sort_values(by='Price for 2', inplace=True)
aff_rest_df
```

Out[40]:

	Name of Restaurant	Price for 2	Cuisine	Location
4685	Soda Hub	40.0	['Beverages']	Navallur
6854	Planet Soda	50.0	['Beverages', ' Juices']	Kandanchavadi
7405	Indian Coffee House	50.0	['Beverages', ' Juices']	Vepery
8355	Kaafemaa	50.0	['Beverages']	Ambattur
1448	Mamee Soup	60.0	['Healthy Food']	West Mambalam
...	...	...	...	...
6746	Biryani Centre	1200.0	['Biryani']	Triplicane
165	Copper Chimney	1200.0	['North Indian', ' Arabian', ' Biryani', ' Mug...	Gopalapuram
316	Prive Restaurant	1200.0	['North Indian', ' Continental', ' Mexican', '...	Mylapore
3697	Zhouyu	1200.0	['Asian']	Alwarpet
644	Coastline Hide Out	1200.0	['Continental', ' Beverages', ' BBQ', ' Chines...	Akkarai

11740 rows × 4 columns

In [41]:
```
# Finding the highest rated list of restaurants
highrate_rest_df = Dataset[['Name of Restaurant', 'Price for 2', 'Cuisine', 'Location', 'Dining Rating']]
highrate_rest_df = highrate_rest_df[highrate_rest_df['Dining Rating'] >= 4.5]
highrate_rest_df.sort_values(by='Price for 2', inplace=True)
highrate_rest_df
```

Out[41]:

	Name of Restaurant	Price for 2	Cuisine	Location	Dining Rating
108	Rayar's Mess	100.0	['South Indian']	Mylapore	4.7
178	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet	4.7
9541	Bombay Kulfi	200.0	['Ice Cream']	Anna Nagar East	4.6
320	Bombay Kulfi	200.0	['Ice Cream']	Adyar	4.9
50	Andhikkadai	200.0	['South Indian']	Velachery	4.6
...	...	...	...	...	...
445	Dakshin - Crowne Plaza Chennai Adyar Park	2500.0	['South Indian', ' Kerala', ' Andhra']	Alwarpet	4.6
395	Southern Spice - Taj Coromandel	3000.0	['South Indian']	Nungambakkam	4.7
229	Vasco's - Hilton Chennai	3400.0	['North Indian', ' Continental', ' Asian']	Guindy	4.6
443	Avartana - ITC Grand Chola	4500.0	['South Indian', ' Chinese', ' Desserts']	Guindy	4.8
303	Peshawri - ITC Grand Chola	4500.0	['North Indian', ' Mughlai']	Guindy	4.6

76 rows × 5 columns

Now, we'll merge the aff_rest_df with highrate_rest_df to obtain the intersection i.e the list of Affordable Restaurants !!

In [42]:
```
highrate_aff_df = pd.merge(aff_rest_df, highrate_rest_df, how='inner', on=['Name of Restaurant', 'Location','Price for 2', 'Cuisi
highrate_aff_df = highrate_aff_df[['Name of Restaurant', 'Price for 2', 'Cuisine', 'Location']]
highrate_aff_df.rename(columns={'Name of Restaurant':'NAME', 'Price for 2':'PRICE', 'Cuisine':'CUSINE_CATEGORY',
 'Location':'REGION'},inplace=True)
```

In [43]:
```
# Affordable Restaurants with low price and high rating
highrate_aff_df
```

Out[43]:

	NAME	PRICE	CUSINE_CATEGORY	REGION
0	Rayar's Mess	100.0	['South Indian']	Mylapore
1	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
2	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
3	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
4	Bombay Kulfi	200.0	['Ice Cream']	Anna Nagar East
5	Nair Mess	200.0	['South Indian', ' Biryani']	Triplicane
6	Andhikkadai	200.0	['South Indian']	Velachery
7	Bombay Kulfi	200.0	['Ice Cream']	Adyar
8	Eating Circles	250.0	['South Indian']	Alwarpet
9	The Sandwich Shop	300.0	['Sandwich', ' Fast Food', ' Beverages']	West Mambalam
10	ID	300.0	['South Indian']	Royapettah
11	Shree Mithai	300.0	['Mithai', ' Street Food', ' Fast Food']	Chetpet
12	Welcome Hotel	300.0	['South Indian', ' Desserts', ' Beverages']	Purasavakkam
13	Momo Sa-Khang by Kailash Kitchen	350.0	['Momos', ' Chinese']	Choolaimedu
14	Fruit Shop On Greams Road	350.0	['Beverages', ' Fast Food', ' Healthy Food', '...	Thousand Lights
15	Cream Stone	350.0	['Desserts', ' Ice Cream']	Thuraipakkam
16	Cream Stone	350.0	['Desserts', ' Ice Cream']	Alwarpet
17	Brownie Heaven	350.0	['Bakery', ' Desserts', ' Beverages']	Royapettah
18	Ratna Cafe	400.0	['South Indian', ' Chinese', ' Street Food', '...	Triplicane
19	Fusilli Reasons	400.0	['Fast Food']	Kilpauk
20	Shmoozie's Hand-Crafted Ice Creams	400.0	['Ice Cream', ' Desserts']	Egmore
21	Krispy Kreme	400.0	['Desserts', ' Beverages']	Royapettah
22	Arabian Kebab Center	400.0	['Biryani', ' North Indian', ' Kebab']	Kodambakkam
23	North East Kitchen	450.0	['Chinese', ' Konkan', ' Momos']	Egmore
24	BurgerMan	450.0	['Burger', ' Fast Food', ' Beverages']	Besant Nagar
25	Kabab Corner	450.0	['Kebab', ' Rolls', ' Mughlai']	Egmore
26	Amadora Gourmet Ice Cream & Sorbet	500.0	['Desserts', ' Ice Cream']	Nungambakkam
27	Shri Rajasthani Dhaba	500.0	['Rajasthani', ' North Indian']	Anna Nagar West
28	Prems Graama Bhojanam	500.0	['South Indian']	Adyar
29	New Pattukottai Kamatchi Mess	550.0	['Tamil', ' Chettinad']	T. Nagar
30	Shyam's Bombay Halwa House	600.0	['North Indian']	T. Nagar
31	Yaa Mohaideen Biryani	600.0	['Biryani', ' Chinese', ' Tamil']	Pallavaram
32	Writer's Cafe	600.0	['Cafe', ' American']	Taramani
33	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Nungambakkam
34	Mezze	700.0	['Middle Eastern']	Alwarpet
35	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Teynampet
36	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Besant Nagar
37	Haagen Dazs	800.0	['Ice Cream', ' Desserts', ' Beverages']	Nungambakkam
38	Flower Drum	800.0	['Chinese', ' Thai']	Adyar
39	Bhangra	800.0	['North Indian']	Kanathur
40	Gastronomer By Double Roti	900.0	['Cafe', ' American', ' Fast Food']	Teynampet
41	AlMaza	1000.0	['Arabian', ' Mughlai', ' North Indian', ' Bir...	Anna Nagar East
42	VB Signature	1000.0	['North Indian', ' South Indian', ' Chinese', ...	Nungambakkam
43	Palmshore	1000.0	['North Indian', ' Chinese', ' Arabian', ' BBQ...	Medavakkam
44	Absolute Thai	1000.0	['Thai', ' Asian']	Foodies Kitchen
45	The Brew Room - The Savera Hotel	1100.0	['Cafe', ' Continental', ' Italian', ' Sandwic...	RK Salai (Cathedral Road)
46	Wok Monk	1200.0	['Asian', ' Chinese', ' Middle Eastern']	Anna Nagar West
47	Kuuraku	1200.0	['Japanese']	Vadapalani
48	Kappa Chakka Kandhari	1200.0	['Kerala', ' South Indian']	Nungambakkam

11.Find the list of most Reliable Restaurants?

The criteria for most Reliable Restaurants would be:-

1)Low Price 2) High Rated 3) Large No. of Votes First step will be to find the restaurants with Votes greater than Mean of Votes

In [44]:
```
mean_votes = Dataset['Dining Rating'].mean()
mean_votes
```

Out[44]:
```
1.8811170212765955
```

In [45]:
```
# Finding list of restaurants that have Votes greater than and equal to Mean of Vote
mean_rest_df = Dataset[['Name of Restaurant', 'Price for 2', 'Cuisine', 'Location',  'Dining Rating']]
mean_rest_df = mean_rest_df[mean_rest_df['Dining Rating'] >=4.5]
mean_rest_df.sort_values(by='Dining Rating', inplace=True)
mean_rest_df
```

Out[45]:

	Name of Restaurant	Price for 2	Cuisine	Location	Dining Rating
15	Welcome Hotel	300.0	['South Indian', ' Desserts', ' Beverages']	Purasavakkam	4.5
207	Va Pho - Asian Canteen	1400.0	['Asian', ' Chinese', ' Beverages']	Gopalapuram	4.5
209	Cream Stone	350.0	['Desserts', ' Ice Cream']	Alwarpet	4.5
214	Sera - The Tapas Bar & Restaurant	1600.0	['Finger Food', ' Seafood', ' Italian', ' Cont...	Gopalapuram	4.5
242	Shyam's Bombay Halwa House	600.0	['North Indian']	T. Nagar	4.5
...	...	...	...	...	...
57	Brownie Heaven	350.0	['Bakery', ' Desserts', ' Beverages']	Royapettah	4.9
184	Gossip Fusion Bistro	1500.0	['Italian', ' Continental', ' Burger', ' Sandw...	Kanathur	4.9
320	Bombay Kulfi	200.0	['Ice Cream']	Adyar	4.9
155	The Sandwich Shop	300.0	['Sandwich', ' Fast Food', ' Beverages']	West Mambalam	4.9
105	Bhangra	800.0	['North Indian']	Kanathur	4.9

76 rows × 5 columns

These are the most reliable, highest rated and affordable restaurants:-

We obtain this dataframe by simply taking the intersection of highrate_aff_df & mean_rest_df This dataframe obtained below shows the restaurants whose: Cost is below 1250 Rating is above 4.5

In [46]:
```
highrate_aff_df = pd.merge(aff_rest_df, highrate_rest_df, how='inner', on=['Name of Restaurant', 'Location','Price for 2', 'Cuisi
highrate_aff_df = highrate_aff_df[['Name of Restaurant', 'Price for 2', 'Cuisine', 'Location']]
highrate_aff_df.rename(columns={'Name of Restaurant':'NAME', 'Price for 2':'PRICE', 'Cuisine':'CUSINE_CATEGORY',
 'Location':'REGION'},inplace=True)
```

In [47]:
```
# Affordable Restaurants with low price and high rating
highrate_aff_df
```

Out[47]:

	NAME	PRICE	CUSINE_CATEGORY	REGION
0	Rayar's Mess	100.0	['South Indian']	Mylapore
1	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
2	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
3	Royal Sandwich Shop	150.0	['Fast Food', ' Desserts', ' Beverages']	Alwarpet
4	Bombay Kulfi	200.0	['Ice Cream']	Anna Nagar East
5	Nair Mess	200.0	['South Indian', ' Biryani']	Triplicane
6	Andhikkadai	200.0	['South Indian']	Velachery
7	Bombay Kulfi	200.0	['Ice Cream']	Adyar
8	Eating Circles	250.0	['South Indian']	Alwarpet
9	The Sandwich Shop	300.0	['Sandwich', ' Fast Food', ' Beverages']	West Mambalam
10	ID	300.0	['South Indian']	Royapettah
11	Shree Mithai	300.0	['Mithai', ' Street Food', ' Fast Food']	Chetpet
12	Welcome Hotel	300.0	['South Indian', ' Desserts', ' Beverages']	Purasavakkam
13	Momo Sa-Khang by Kailash Kitchen	350.0	['Momos', ' Chinese']	Choolaimedu
14	Fruit Shop On Greams Road	350.0	['Beverages', ' Fast Food', ' Healthy Food', '...	Thousand Lights
15	Cream Stone	350.0	['Desserts', ' Ice Cream']	Thuraipakkam
16	Cream Stone	350.0	['Desserts', ' Ice Cream']	Alwarpet
17	Brownie Heaven	350.0	['Bakery', ' Desserts', ' Beverages']	Royapettah
18	Ratna Cafe	400.0	['South Indian', ' Chinese', ' Street Food', '...	Triplicane
19	Fusilli Reasons	400.0	['Fast Food']	Kilpauk
20	Shmoozie's Hand-Crafted Ice Creams	400.0	['Ice Cream', ' Desserts']	Egmore
21	Krispy Kreme	400.0	['Desserts', ' Beverages']	Royapettah
22	Arabian Kebab Center	400.0	['Biryani', ' North Indian', ' Kebab']	Kodambakkam
23	North East Kitchen	450.0	['Chinese', ' Konkan', ' Momos']	Egmore
24	BurgerMan	450.0	['Burger', ' Fast Food', ' Beverages']	Besant Nagar
25	Kabab Corner	450.0	['Kebab', ' Rolls', ' Mughlai']	Egmore
26	Amadora Gourmet Ice Cream & Sorbet	500.0	['Desserts', ' Ice Cream']	Nungambakkam
27	Shri Rajasthani Dhaba	500.0	['Rajasthani', ' North Indian']	Anna Nagar West
28	Prems Graama Bhojanam	500.0	['South Indian']	Adyar
29	New Pattukottai Kamatchi Mess	550.0	['Tamil', ' Chettinad']	T. Nagar
30	Shyam's Bombay Halwa House	600.0	['North Indian']	T. Nagar
31	Yaa Mohaideen Biryani	600.0	['Biryani', ' Chinese', ' Tamil']	Pallavaram
32	Writer's Cafe	600.0	['Cafe', ' American']	Taramani
33	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Nungambakkam
34	Mezze	700.0	['Middle Eastern']	Alwarpet
35	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Teynampet
36	Blind Ch3mistry	700.0	['Cafe', ' Continental', ' Italian', ' Dessert...	Besant Nagar
37	Haagen Dazs	800.0	['Ice Cream', ' Desserts', ' Beverages']	Nungambakkam
38	Flower Drum	800.0	['Chinese', ' Thai']	Adyar
39	Bhangra	800.0	['North Indian']	Kanathur
40	Gastronomer By Double Roti	900.0	['Cafe', ' American', ' Fast Food']	Teynampet
41	AlMaza	1000.0	['Arabian', ' Mughlai', ' North Indian', ' Bir...	Anna Nagar East
42	VB Signature	1000.0	['North Indian', ' South Indian', ' Chinese', ...	Nungambakkam
43	Palmshore	1000.0	['North Indian', ' Chinese', ' Arabian', ' BBQ...	Medavakkam
44	Absolute Thai	1000.0	['Thai', ' Asian']	Foodies Kitchen
45	The Brew Room - The Savera Hotel	1100.0	['Cafe', ' Continental', ' Italian', ' Sandwic...	RK Salai (Cathedral Road)
46	Wok Monk	1200.0	['Asian', ' Chinese', ' Middle Eastern']	Anna Nagar West
47	Kuuraku	1200.0	['Japanese']	Vadapalani
48	Kappa Chakka Kandhari	1200.0	['Kerala', ' South Indian']	Nungambakkam

In [ ]:
```
```