to-data-set-analysis-visualization

February 23, 2024

1 Zomato Data Set Analysis and Visualization

1.1 Importing Libraries

[1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
plt.style.use('dark_background')
```

1.2 Reading CSV

[2]:

```
df = pd.read_csv('zomato.csv')
df.head()
```

[2]:

```
                                                 url  \
0  https://www.zomato.com/bangalore/jalsa-banasha…
1  https://www.zomato.com/bangalore/spice-elephan…
2  https://www.zomato.com/SanchurroBangalore?cont…
3  https://www.zomato.com/bangalore/addhuri-udupi…
4  https://www.zomato.com/bangalore/grand-village…

                                             address                   name  \
0  942, 21st Main Road, 2nd Stage, Banashankari, …                  Jalsa
1  2nd Floor, 80 Feet Road, Near Big Bazaar, 6th …         Spice Elephant
2  1112, Next to KIMS Medical College, 17th Cross…        San Churro Cafe
3  1st Floor, Annakuteera, 3rd Stage, Banashankar…  Addhuri Udupi Bhojana
4  10, 3rd Floor, Lakshmi Associates, Gandhi Baza…          Grand Village

  online_order book_table   rate  votes                             phone  \
0          Yes        Yes  4.1/5    775    080 42297555\r\n+91 9743772233
1          Yes         No  4.1/5    787                      080 41714161
2          Yes         No  3.8/5    918                    +91 9663487993
3           No         No  3.7/5     88                    +91 9620009302
4           No         No  3.8/5    166  +91 8026612447\r\n+91 9901210005

       location            rest_type  \
0  Banashankari        Casual Dining
1  Banashankari        Casual Dining
2  Banashankari  Cafe, Casual Dining
3  Banashankari          Quick Bites
4  Basavanagudi        Casual Dining

                                          dish_liked  \
0  Pasta, Lunch Buffet, Masala Papad, Paneer Laja…
1  Momos, Lunch Buffet, Chocolate Nirvana, Thai G…
2  Churros, Cannelloni, Minestrone Soup, Hot Choc…
3                                        Masala Dosa
4                                Panipuri, Gol Gappe

                         cuisines approx_cost(for two people)  \
0  North Indian, Mughlai, Chinese                         800
1     Chinese, North Indian, Thai                         800
2          Cafe, Mexican, Italian                         800
3      South Indian, North Indian                         300
4        North Indian, Rajasthani                         600

                                        reviews_list menu_item  \
0  [('Rated 4.0', 'RATED\n  A beautiful place to …        []
1  [('Rated 4.0', 'RATED\n  Had been here for din…        []
2  [('Rated 3.0', "RATED\n  Ambience is not that …        []
3  [('Rated 4.0', "RATED\n  Great food and proper…        []
4  [('Rated 4.0', 'RATED\n  Very good restaurant …        []

  listed_in(type) listed_in(city)
0          Buffet    Banashankari
1          Buffet    Banashankari
2          Buffet    Banashankari
3          Buffet    Banashankari
4          Buffet    Banashankari
```

[3]:
```
df.shape
```

[3]:
```
(51717, 17)
```

[4]:
```
df.columns
```

[4]:
```
Index(['url', 'address', 'name', 'online_order', 'book_table', 'rate', 'votes',
       'phone', 'location', 'rest_type', 'dish_liked', 'cuisines',
       'approx_cost(for two people)', 'reviews_list', 'menu_item',
       'listed_in(type)', 'listed_in(city)'],
      dtype='object')
```

```
[5]: df = df.drop(['url', 'address', 'phone', 'menu_item', 'dish_liked',␣
      ↪'reviews_list'], axis = 1)
     df.head()
```

```
[5]:                     name online_order book_table   rate  votes      location  \
     0                  Jalsa          Yes        Yes  4.1/5    775  Banashankari
     1         Spice Elephant          Yes         No  4.1/5    787  Banashankari
     2        San Churro Cafe          Yes         No  3.8/5    918  Banashankari
     3  Addhuri Udupi Bhojana           No         No  3.7/5     88  Banashankari
     4          Grand Village           No         No  3.8/5    166  Basavanagudi

                   rest_type                        cuisines  \
     0         Casual Dining  North Indian, Mughlai, Chinese
     1         Casual Dining     Chinese, North Indian, Thai
     2   Cafe, Casual Dining          Cafe, Mexican, Italian
     3           Quick Bites      South Indian, North Indian
     4         Casual Dining        North Indian, Rajasthani

       approx_cost(for two people) listed_in(type) listed_in(city)
     0                         800          Buffet    Banashankari
     1                         800          Buffet    Banashankari
     2                         800          Buffet    Banashankari
     3                         300          Buffet    Banashankari
     4                         600          Buffet    Banashankari
```

```
[6]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 51717 entries, 0 to 51716
Data columns (total 11 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   name                         51717 non-null  object
 1   online_order                 51717 non-null  object
 2   book_table                   51717 non-null  object
 3   rate                         43942 non-null  object
 4   votes                        51717 non-null  int64
 5   location                     51696 non-null  object
 6   rest_type                    51490 non-null  object
 7   cuisines                     51672 non-null  object
 8   approx_cost(for two people)  51371 non-null  object
 9   listed_in(type)              51717 non-null  object
 10  listed_in(city)              51717 non-null  object
dtypes: int64(1), object(10)
memory usage: 4.3+ MB
```

1.3 Dropping Duplicates

[7]:

```
df.drop_duplicates(inplace = True)
df.shape
```

[7]:

```
(51609, 11)
```

1.4 Cleaning Rate Column

[8]:

```
df['rate'].unique()
```

[8]:

```
array(['4.1/5', '3.8/5', '3.7/5', '3.6/5', '4.6/5', '4.0/5', '4.2/5',
       '3.9/5', '3.1/5', '3.0/5', '3.2/5', '3.3/5', '2.8/5', '4.4/5',
       '4.3/5', 'NEW', '2.9/5', '3.5/5', nan, '2.6/5', '3.8 /5', '3.4/5',
       '4.5/5', '2.5/5', '2.7/5', '4.7/5', '2.4/5', '2.2/5', '2.3/5',
       '3.4 /5', '-', '3.6 /5', '4.8/5', '3.9 /5', '4.2 /5', '4.0 /5',
       '4.1 /5', '3.7 /5', '3.1 /5', '2.9 /5', '3.3 /5', '2.8 /5',
       '3.5 /5', '2.7 /5', '2.5 /5', '3.2 /5', '2.6 /5', '4.5 /5',
       '4.3 /5', '4.4 /5', '4.9/5', '2.1/5', '2.0/5', '1.8/5', '4.6 /5',
       '4.9 /5', '3.0 /5', '4.8 /5', '2.3 /5', '4.7 /5', '2.4 /5',
       '2.1 /5', '2.2 /5', '2.0 /5', '1.8 /5'], dtype=object)
```

1.5 Removing “NEW” , “-” and “/5” from Rate Column

[9]:

```
def handlerate(value):
    if(value=='NEW' or value=='-'):
        return np.nan
    else:
        value = str(value).split('/')
        value = value[0]
        return float(value)

df['rate'] = df['rate'].apply(handlerate)
df['rate'].head()
```

[9]:

```
0    4.1
1    4.1
2    3.8
3    3.7
4    3.8
Name: rate, dtype: float64
```

1.6 Filling Null Values in Rate Column with Mean

[10]:
```
df['rate'].fillna(df['rate'].mean(), inplace = True)
df['rate'].isnull().sum()
```

[10]:
```
0
```

[11]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 51609 entries, 0 to 51716
Data columns (total 11 columns):
 #   Column                       Non-Null Count  Dtype
---  ------                       --------------  -----
 0   name                         51609 non-null  object
 1   online_order                 51609 non-null  object
 2   book_table                   51609 non-null  object
 3   rate                         51609 non-null  float64
 4   votes                        51609 non-null  int64
 5   location                     51588 non-null  object
 6   rest_type                    51382 non-null  object
 7   cuisines                     51564 non-null  object
 8   approx_cost(for two people)  51265 non-null  object
 9   listed_in(type)              51609 non-null  object
 10  listed_in(city)              51609 non-null  object
dtypes: float64(1), int64(1), object(9)
memory usage: 4.7+ MB
```

1.7 Dropping Null Values

[12]:
```
df.dropna(inplace = True)
df.head()
```

[12]:
```
                    name online_order book_table  rate  votes      location  \
0                  Jalsa          Yes        Yes   4.1    775  Banashankari
1         Spice Elephant          Yes         No   4.1    787  Banashankari
2        San Churro Cafe          Yes         No   3.8    918  Banashankari
3  Addhuri Udupi Bhojana           No         No   3.7     88  Banashankari
4          Grand Village           No         No   3.8    166   Basavanagudi

             rest_type                        cuisines  \
0        Casual Dining  North Indian, Mughlai, Chinese
1        Casual Dining     Chinese, North Indian, Thai
2  Cafe, Casual Dining         Cafe, Mexican, Italian
3          Quick Bites      South Indian, North Indian
4        Casual Dining        North Indian, Rajasthani
```

```
  approx_cost(for two people) listed_in(type) listed_in(city)
0                         800          Buffet    Banashankari
1                         800          Buffet    Banashankari
2                         800          Buffet    Banashankari
3                         300          Buffet    Banashankari
4                         600          Buffet    Banashankari
```

[13]:
```
df.rename(columns = {'approx_cost(for two people)':'Cost2plates',␣
 ↪'listed_in(type)':'Type'}, inplace = True)
df.head()
```

[13]:
```
                    name online_order book_table  rate  votes      location  \
0                  Jalsa          Yes        Yes   4.1    775  Banashankari   
1         Spice Elephant          Yes         No   4.1    787  Banashankari   
2        San Churro Cafe          Yes         No   3.8    918  Banashankari   
3  Addhuri Udupi Bhojana           No         No   3.7     88  Banashankari   
4          Grand Village           No         No   3.8    166  Basavanagudi   

             rest_type                        cuisines Cost2plates    Type  \
0        Casual Dining  North Indian, Mughlai, Chinese         800  Buffet   
1        Casual Dining     Chinese, North Indian, Thai         800  Buffet   
2  Cafe, Casual Dining          Cafe, Mexican, Italian         800  Buffet   
3          Quick Bites      South Indian, North Indian         300  Buffet   
4        Casual Dining        North Indian, Rajasthani         600  Buffet   

  listed_in(city)  
0    Banashankari  
1    Banashankari  
2    Banashankari  
3    Banashankari  
4    Banashankari  
```

[14]:
```
df['location'].unique()
```

[14]:
```
array(['Banashankari', 'Basavanagudi', 'Mysore Road', 'Jayanagar',
       'Kumaraswamy Layout', 'Rajarajeshwari Nagar', 'Vijay Nagar',
       'Uttarahalli', 'JP Nagar', 'South Bangalore', 'City Market',
       'Nagarbhavi', 'Bannerghatta Road', 'BTM', 'Kanakapura Road',
       'Bommanahalli', 'CV Raman Nagar', 'Electronic City', 'HSR',
       'Marathahalli', 'Wilson Garden', 'Shanti Nagar',
       'Koramangala 5th Block', 'Koramangala 8th Block', 'Richmond Road',
       'Koramangala 7th Block', 'Jalahalli', 'Koramangala 4th Block',
       'Bellandur', 'Sarjapur Road', 'Whitefield', 'East Bangalore',
       'Old Airport Road', 'Indiranagar', 'Koramangala 1st Block',
       'Frazer Town', 'RT Nagar', 'MG Road', 'Brigade Road',
       'Lavelle Road', 'Church Street', 'Ulsoor', 'Residency Road',
       'Shivajinagar', 'Infantry Road', 'St. Marks Road',
       'Cunningham Road', 'Race Course Road', 'Commercial Street',
       'Vasanth Nagar', 'HBR Layout', 'Domlur', 'Ejipura',
       'Jeevan Bhima Nagar', 'Old Madras Road', 'Malleshwaram',
       'Seshadripuram', 'Kammanahalli', 'Koramangala 6th Block',
       'Majestic', 'Langford Town', 'Central Bangalore', 'Sanjay Nagar',
       'Brookefield', 'ITPL Main Road, Whitefield',
       'Varthur Main Road, Whitefield', 'KR Puram',
       'Koramangala 2nd Block', 'Koramangala 3rd Block', 'Koramangala',
       'Hosur Road', 'Rajajinagar', 'Banaswadi', 'North Bangalore',
       'Nagawara', 'Hennur', 'Kalyan Nagar', 'New BEL Road', 'Jakkur',
       'Rammurthy Nagar', 'Thippasandra', 'Kaggadasapura', 'Hebbal',
       'Kengeri', 'Sankey Road', 'Sadashiv Nagar', 'Basaveshwara Nagar',
       'Yeshwantpur', 'West Bangalore', 'Magadi Road', 'Yelahanka',
       'Sahakara Nagar', 'Peenya'], dtype=object)
```

[15]:
```
df['listed_in(city)'].unique()
```

[15]:
```
array(['Banashankari', 'Bannerghatta Road', 'Basavanagudi', 'Bellandur',
       'Brigade Road', 'Brookefield', 'BTM', 'Church Street',
       'Electronic City', 'Frazer Town', 'HSR', 'Indiranagar',
       'Jayanagar', 'JP Nagar', 'Kalyan Nagar', 'Kammanahalli',
       'Koramangala 4th Block', 'Koramangala 5th Block',
       'Koramangala 6th Block', 'Koramangala 7th Block', 'Lavelle Road',
       'Malleshwaram', 'Marathahalli', 'MG Road', 'New BEL Road',
       'Old Airport Road', 'Rajajinagar', 'Residency Road',
       'Sarjapur Road', 'Whitefield'], dtype=object)
```

1.8 Listed in(city) and location, both are there, lets keep only one.

[16]:
```
df = df.drop(['listed_in(city)'], axis = 1)
```

[17]:
```
df['Cost2plates'].unique()
```

[17]:
```
array(['800', '300', '600', '700', '550', '500', '450', '650', '400',
       '900', '200', '750', '150', '850', '100', '1,200', '350', '250',
       '950', '1,000', '1,500', '1,300', '199', '80', '1,100', '160',
       '1,600', '230', '130', '50', '190', '1,700', '1,400', '180',
       '1,350', '2,200', '2,000', '1,800', '1,900', '330', '2,500',
       '2,100', '3,000', '2,800', '3,400', '40', '1,250', '3,500',
       '4,000', '2,400', '2,600', '120', '1,450', '469', '70', '3,200',
       '60', '560', '240', '360', '6,000', '1,050', '2,300', '4,100',
       '5,000', '3,700', '1,650', '2,700', '4,500', '140'], dtype=object)
```

1.9 Removing , from Cost2Plates Column

[18]:

```
def handlecomma(value):
    value = str(value)
    if ',' in value:
        value = value.replace(',', '')
        return float(value)
    else:
        return float(value)

df['Cost2plates'] = df['Cost2plates'].apply(handlecomma)
df['Cost2plates'].unique()
```

[18]:

```
array([ 800.,  300.,  600.,  700.,  550.,  500.,  450.,  650.,  400.,
        900.,  200.,  750.,  150.,  850.,  100., 1200.,  350.,  250.,
        950., 1000., 1500., 1300.,  199.,   80., 1100.,  160., 1600.,
        230.,  130.,   50.,  190., 1700., 1400.,  180., 1350., 2200.,
       2000., 1800., 1900.,  330., 2500., 2100., 3000., 2800., 3400.,
         40., 1250., 3500., 4000., 2400., 2600.,  120., 1450.,  469.,
         70., 3200.,   60.,  560.,  240.,  360., 6000., 1050., 2300.,
       4100., 5000., 3700., 1650., 2700., 4500.,  140.])
```

[19]:

```
df.head()
```

[19]:

```
                    name online_order book_table  rate  votes      location  \
0                  Jalsa          Yes        Yes   4.1    775  Banashankari
1         Spice Elephant          Yes         No   4.1    787  Banashankari
2        San Churro Cafe          Yes         No   3.8    918  Banashankari
3  Addhuri Udupi Bhojana           No         No   3.7     88  Banashankari
4          Grand Village           No         No   3.8    166  Basavanagudi

              rest_type                        cuisines  Cost2plates    Type
0         Casual Dining  North Indian, Mughlai, Chinese        800.0  Buffet
1         Casual Dining     Chinese, North Indian, Thai        800.0  Buffet
2   Cafe, Casual Dining          Cafe, Mexican, Italian        800.0  Buffet
3           Quick Bites      South Indian, North Indian        300.0  Buffet
4         Casual Dining        North Indian, Rajasthani        600.0  Buffet
```

1.10 Cleaning Rest Type Column

[20]:

```
rest_types = df['rest_type'].value_counts(ascending  = False)
rest_types
```

[20]:

```
Quick Bites                     19010
Casual Dining                   10253
Cafe                             3682
Delivery                         2574
```

```
Dessert Parlor                 2242
                              …
Dessert Parlor, Kiosk             2
Food Court, Beverage Shop         2
Dessert Parlor, Food Court        2
Quick Bites, Kiosk                1
Sweet Shop, Dessert Parlor        1
Name: rest_type, Length: 93, dtype: int64
```

[21]:

```python
rest_types_lessthan1000 = rest_types[rest_types<1000]
rest_types_lessthan1000
```

[21]:

```
Beverage Shop                 863
Bar                           686
Food Court                    616
Sweet Shop                    468
Bar, Casual Dining            411
                             …
Dessert Parlor, Kiosk           2
Food Court, Beverage Shop       2
Dessert Parlor, Food Court      2
Quick Bites, Kiosk              1
Sweet Shop, Dessert Parlor      1
Name: rest_type, Length: 85, dtype: int64
```

1.11 Making Rest Types less than 1000 in frequency as others

[22]:

```python
def handle_rest_type(value):
    if(value in rest_types_lessthan1000):
        return 'others'
    else:
        return value

df['rest_type'] = df['rest_type'].apply(handle_rest_type)
df['rest_type'].value_counts()
```

[22]:

```
Quick Bites           19010
Casual Dining         10253
others                 9003
Cafe                   3682
Delivery               2574
Dessert Parlor         2242
Takeaway, Delivery     2008
Bakery                 1140
Casual Dining, Bar     1130
Name: rest_type, dtype: int64
```

1.12 Cleaning Location Column

[23]:

```
location = df['location'].value_counts(ascending  = False)

location_lessthan300 = location[location<300]



def handle_location(value):
    if(value in location_lessthan300):
        return 'others'
    else:
        return value

df['location'] = df['location'].apply(handle_location)
df['location'].value_counts()
```

[23]:

```
BTM                      5056
others                   4954
HSR                      2494
Koramangala 5th Block    2479
JP Nagar                 2218
Whitefield               2105
Indiranagar              2026
Jayanagar                1916
Marathahalli             1805
Bannerghatta Road        1609
Bellandur                1268
Electronic City          1246
Koramangala 1st Block    1236
Brigade Road             1210
Koramangala 7th Block    1174
Koramangala 6th Block    1127
Sarjapur Road            1047
Koramangala 4th Block    1017
Ulsoor                   1011
Banashankari              902
MG Road                   893
Kalyan Nagar              841
Richmond Road             803
Malleshwaram              721
Frazer Town               714
Basavanagudi              684
Residency Road            671
Brookefield               656
New BEL Road              644
Banaswadi                 640
```

```
Kammanahalli              639
Rajajinagar               591
Church Street             566
Lavelle Road              518
Shanti Nagar              508
Shivajinagar              498
Cunningham Road           490
Domlur                    482
Old Airport Road          437
Ejipura                   433
Commercial Street         370
St. Marks Road            343
Name: location, dtype: int64
```

1.13 Cleaning Cuisines Column

[24]:

```
cuisines = df['cuisines'].value_counts(ascending  = False)


cuisines_lessthan100 = cuisines[cuisines<100]



def handle_cuisines(value):
    if(value in cuisines_lessthan100):
        return 'others'
    else:
        return value

df['cuisines'] = df['cuisines'].apply(handle_cuisines)
df['cuisines'].value_counts()
```

[24]:

```
others                                 26159
North Indian                            2852
North Indian, Chinese                   2351
South Indian                            1820
Biryani                                  903
                                       …
South Indian, Chinese, North Indian      105
North Indian, Mughlai, Chinese           104
South Indian, Fast Food                  104
Italian, Pizza                           102
North Indian, Chinese, Seafood           102
Name: cuisines, Length: 70, dtype: int64
```

[25]:

```
df.head()
```

[25]:

```
                    name online_order book_table  rate  votes      location  \
0                  Jalsa          Yes        Yes   4.1    775  Banashankari
1         Spice Elephant          Yes         No   4.1    787  Banashankari
2        San Churro Cafe          Yes         No   3.8    918  Banashankari
3  Addhuri Udupi Bhojana           No         No   3.7     88  Banashankari
4          Grand Village           No         No   3.8    166  Basavanagudi

       rest_type                        cuisines  Cost2plates    Type
0  Casual Dining  North Indian, Mughlai, Chinese        800.0  Buffet
1  Casual Dining                          others        800.0  Buffet
2         others                          others        800.0  Buffet
3    Quick Bites      South Indian, North Indian        300.0  Buffet
4  Casual Dining                          others        600.0  Buffet
```

1.14 Data is Clean, Lets jump to Visualization

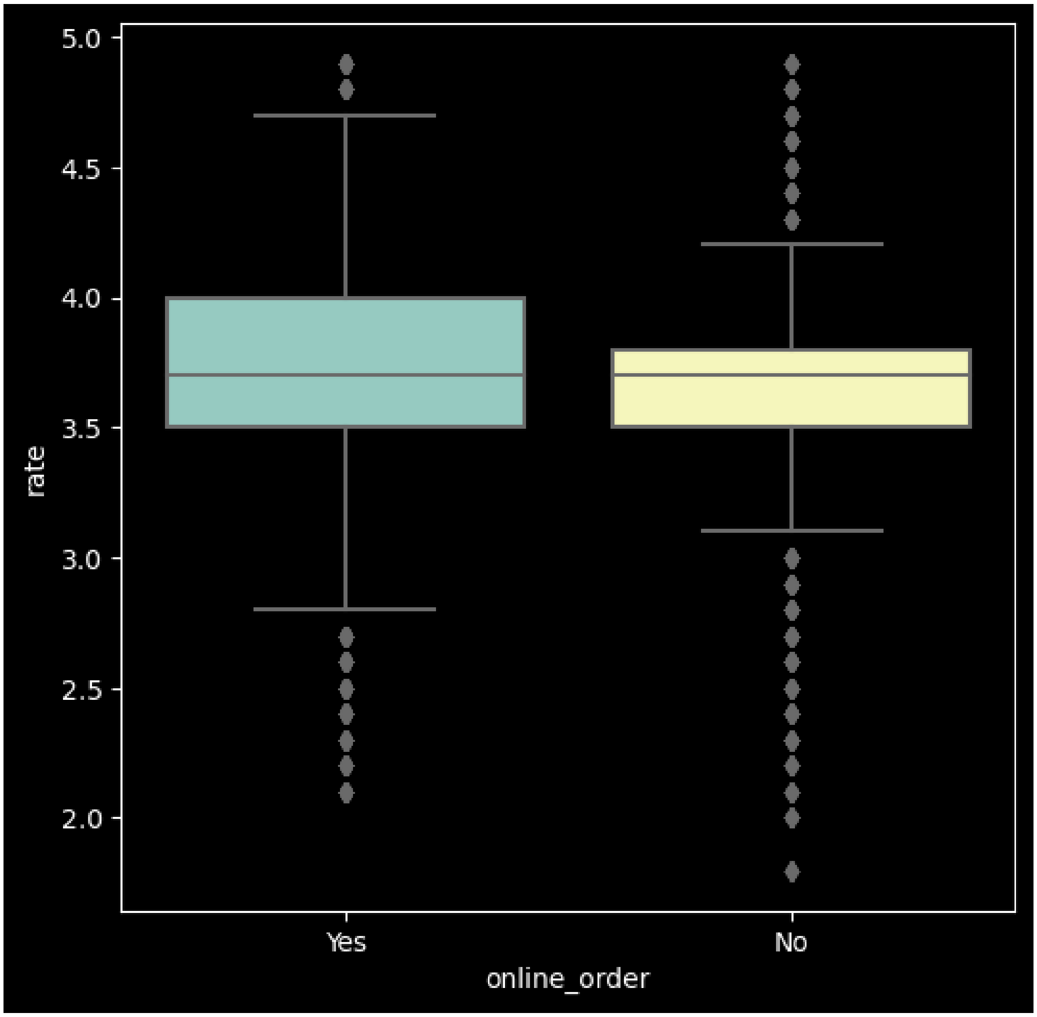
1.15 Visualizing Online Order vs Rate

[45]:

```
plt.figure(figsize = (6,6))
sns.boxplot(x = 'online_order', y = 'rate', data = df)
```

[45]:

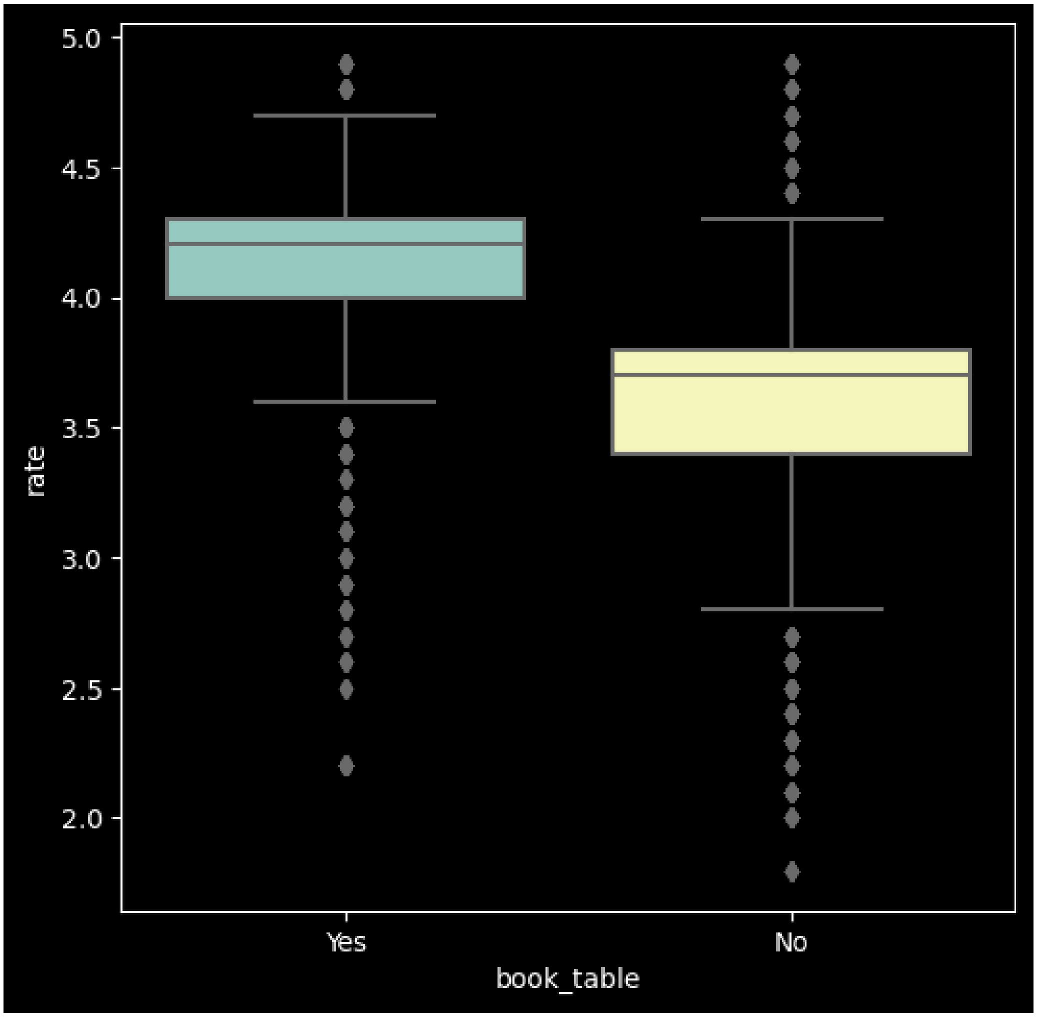
```
<Axes: xlabel='online_order', ylabel='rate'>
```



1.16 Visualizing Book Table vs Rate

```
[46]: plt.figure(figsize = (6,6))
      sns.boxplot(x = 'book_table', y = 'rate', data = df)
```

```
[46]: <Axes: xlabel='book_table', ylabel='rate'>
```



1.17 Visualizing Online Order Facility, Location Wise

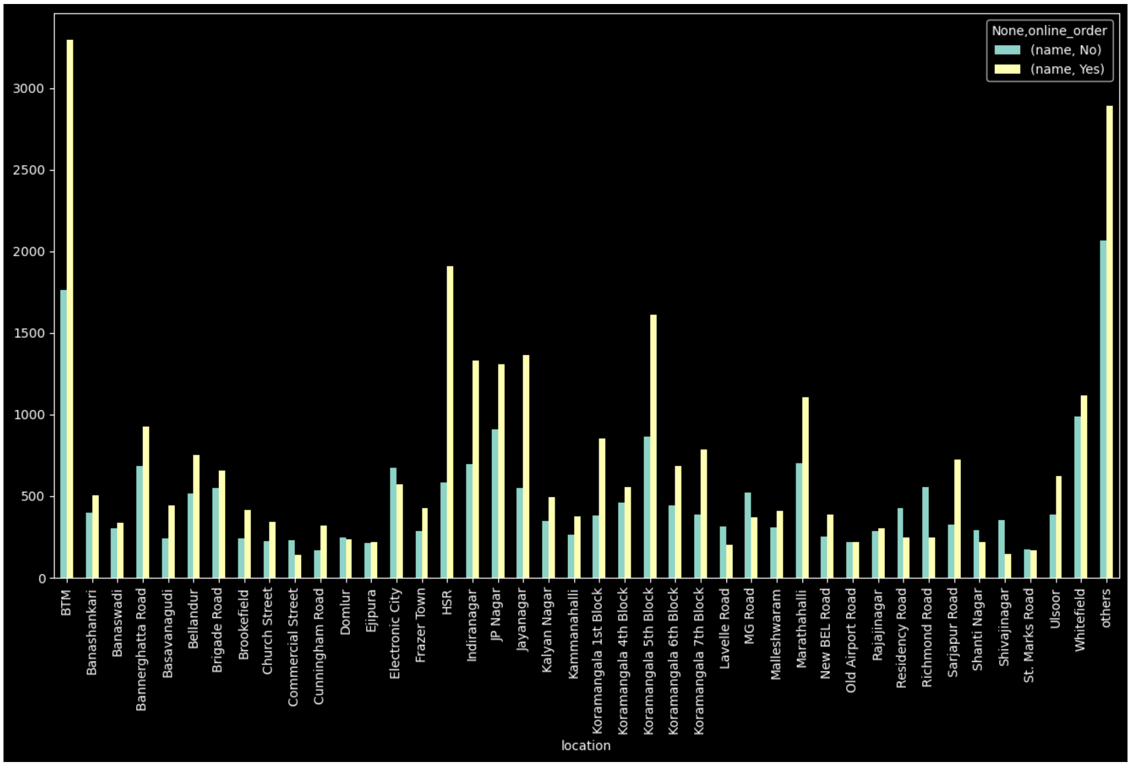
```
[47]: df1 = df.groupby(['location','online_order'])['name'].count()
df1.to_csv('location_online.csv')
df1 = pd.read_csv('location_online.csv')
df1 = pd.pivot_table(df1, values=None, index=['location'],␣
 ↪columns=['online_order'], fill_value=0, aggfunc=np.sum)
df1
```

```
[47]:                      name
online_order            No   Yes
location
BTM                   1763  3293
Banashankari           397   505
Banaswadi              302   338
Bannerghatta Road      685   924
```

```
Basavanagudi            243   441
Bellandur               517   751
Brigade Road            552   658
Brookefield             239   417
Church Street           226   340
Commercial Street       228   142
Cunningham Road         168   322
Domlur                  247   235
Ejipura                 214   219
Electronic City         676   570
Frazer Town             287   427
HSR                     584  1910
Indiranagar             697  1329
JP Nagar                911  1307
Jayanagar               552  1364
Kalyan Nagar            350   491
Kammanahalli            264   375
Koramangala 1st Block   384   852
Koramangala 4th Block   459   558
Koramangala 5th Block   866  1613
Koramangala 6th Block   445   682
Koramangala 7th Block   389   785
Lavelle Road            315   203
MG Road                 520   373
Malleshwaram            309   412
Marathahalli            701  1104
New BEL Road            255   389
Old Airport Road        221   216
Rajajinagar             286   305
Residency Road          424   247
Richmond Road           557   246
Sarjapur Road           323   724
Shanti Nagar            289   219
Shivajinagar            354   144
St. Marks Road          176   167
Ulsoor                  389   622
Whitefield              986  1119
others                 2064  2890
```

[48]:
```
df1.plot(kind = 'bar', figsize = (15,8))
```

[48]:
```
<Axes: xlabel='location'>
```



1.18 Visualizing Book Table Facility, Location Wise

```
[49]: df2 = df.groupby(['location','book_table'])['name'].count()
df2.to_csv('location_booktable.csv')
df2 = pd.read_csv('location_booktable.csv')
df2 = pd.pivot_table(df2, values=None, index=['location'],␣
 ↪columns=['book_table'], fill_value=0, aggfunc=np.sum)
df2
```

```
[49]:                      name
book_table              No  Yes
location
BTM                   4889  167
Banashankari           839   63
Banaswadi              632    8
Bannerghatta Road     1510   99
Basavanagudi           668   16
Bellandur             1170   98
Brigade Road          1034  176
Brookefield            582   74
Church Street          385  181
Commercial Street      370    0
Cunningham Road        315  175
```

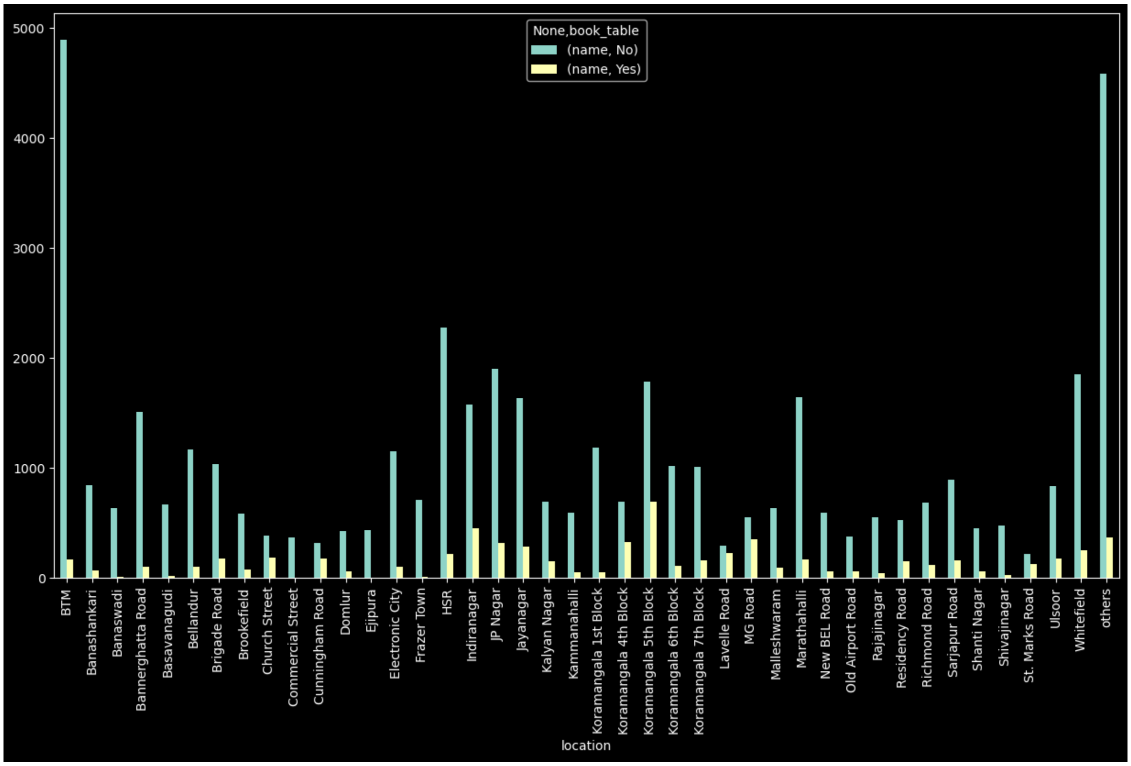
```
Domlur                  427   55
Ejipura                 433    0
Electronic City        1148   98
Frazer Town             706    8
HSR                    2277  217
Indiranagar            1578  448
JP Nagar               1903  315
Jayanagar              1637  279
Kalyan Nagar            692  149
Kammanahalli            590   49
Koramangala 1st Block  1186   50
Koramangala 4th Block   695  322
Koramangala 5th Block  1787  692
Koramangala 6th Block  1015  112
Koramangala 7th Block  1012  162
Lavelle Road            290  228
MG Road                 546  347
Malleshwaram            632   89
Marathahalli           1642  163
New BEL Road            588   56
Old Airport Road        378   59
Rajajinagar             550   41
Residency Road          522  149
Richmond Road           687  116
Sarjapur Road           893  154
Shanti Nagar            451   57
Shivajinagar            475   23
St. Marks Road          219  124
Ulsoor                  834  177
Whitefield             1852  253
others                 4587  367
```

[50]:

```
df2.plot(kind = 'bar', figsize = (15,8))
```

[50]:

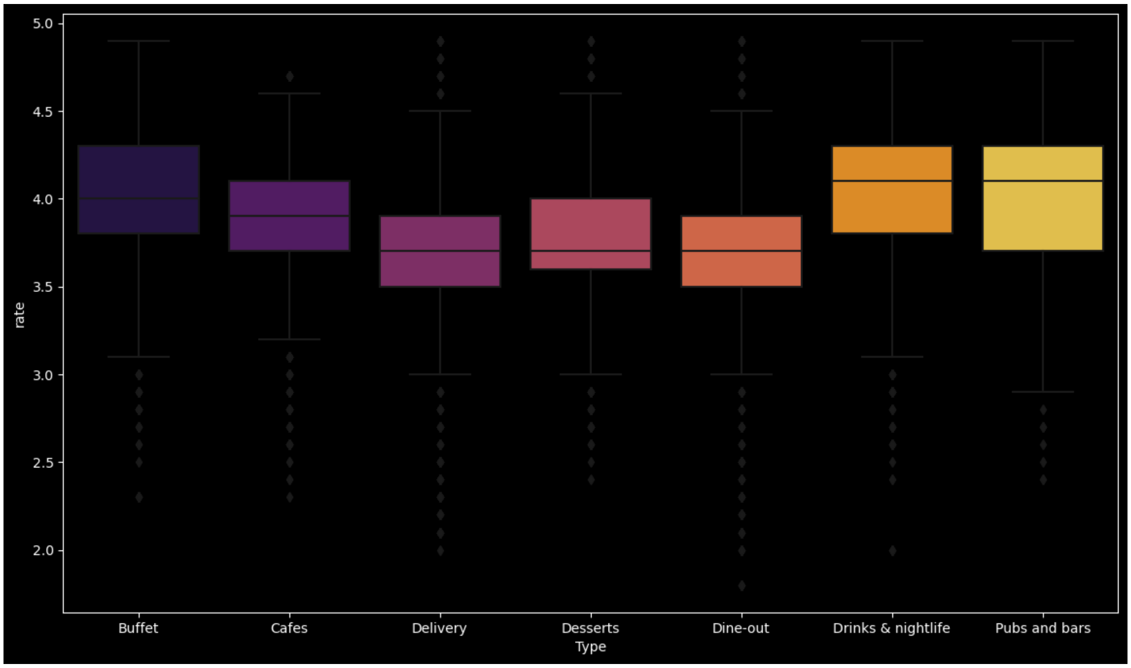
```
<Axes: xlabel='location'>
```



1.19 Visualizing Types of Restaurents vs Rate

```
[51]: plt.figure(figsize = (14, 8))
      sns.boxplot(x = 'Type', y = 'rate', data = df, palette = 'inferno')
```

```
[51]: <Axes: xlabel='Type', ylabel='rate'>
```



1.20 Grouping Types of Restaurents, location wise

[52]:
```
df3 = df.groupby(['location','Type'])['name'].count()
df3.to_csv('location_Type.csv')
df3 = pd.read_csv('location_Type.csv')
df3 = pd.pivot_table(df3, values=None, index=['location'], columns=['Type'],␣
 ↪fill_value=0, aggfunc=np.sum)
df3
```

[52]:
```
                     name                                         \
Type               Buffet Cafes Delivery Desserts Dine-out
location
BTM                    21    83     3053      198     1660
Banashankari            7    36      418       71      356
Banaswadi               0    24      310       37      262
Bannerghatta Road       9    46      828      137      578
Basavanagudi            7    11      344       66      251
Bellandur              28    36      617       75      479
Brigade Road           25    46      497      108      455
Brookefield             6    17      339       45      245
Church Street          19    51      193       29      215
Commercial Street       0    13      121       77      159
Cunningham Road        29    34      194       26      184
Domlur                 15    13      261       35      135
Ejipura                 0     0      245       16      172
```

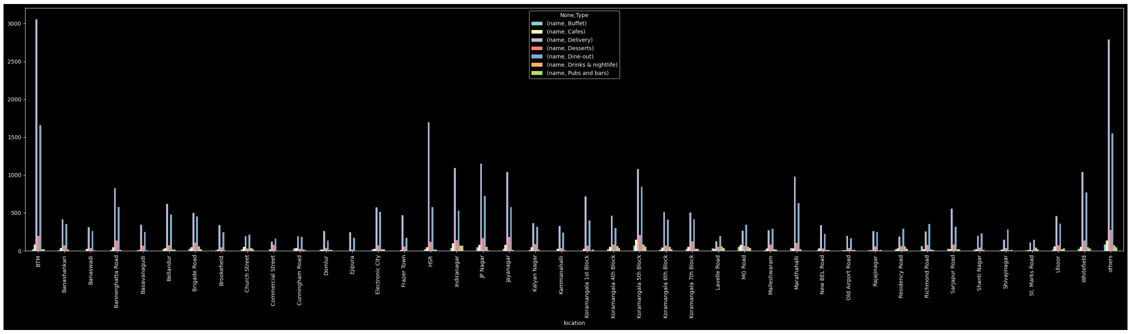
```
Electronic City          23   24    570     71     516
Frazer Town               1   11    470     56     172
HSR                      19   49   1694    120     580
Indiranagar              38   97   1091    140     529
JP Nagar                 45   76   1151    166     722
Jayanagar                27   77   1043    182     575
Kalyan Nagar              9   45    366     88     315
Kammanahalli              2   27    329     35     240
Koramangala 1st Block     3   26    716     70     398
Koramangala 4th Block    21   53    464     81     302
Koramangala 5th Block    65  146   1075    209     842
Koramangala 6th Block    18   43    511     70     411
Koramangala 7th Block    25   52    503    127     417
Lavelle Road             30   27    127     50     191
MG Road                  51   76    266     68     343
Malleshwaram             11   31    269     85     291
Marathahalli             34   32    980    105     630
New BEL Road              4   29    338     33     224
Old Airport Road         12    5    200     35     164
Rajajinagar              10    4    258     55     251
Residency Road           20   31    187     63     289
Richmond Road            63   21    257     78     356
Sarjapur Road            25   22    558     82     319
Shanti Nagar              9   22    198     39     229
Shivajinagar              6   17    143     37     280
St. Marks Road            5   10    111     10     145
Ulsoor                   16   56    456     71     359
Whitefield               28   51   1041    137     768
others                   83  133   2787    276    1553


Type                  Drinks & nightlife Pubs and bars
location
BTM                                   22            19
Banashankari                          14             0
Banaswadi                              6             1
Bannerghatta Road                      9             2
Basavanagudi                           5             0
Bellandur                             17            16
Brigade Road                          57            22
Brookefield                            4             0
Church Street                         36            23
Commercial Street                      0             0
Cunningham Road                       16             7
Domlur                                12            11
Ejipura                                0             0
Electronic City                       21            21
```

```
Frazer Town                           2             2
HSR                                  14            18
Indiranagar                          65            66
JP Nagar                             51             7
Jayanagar                            12             0
Kalyan Nagar                         18             0
Kammanahalli                          6             0
Koramangala 1st Block                 7            16
Koramangala 4th Block                62            34
Koramangala 5th Block                84            58
Koramangala 6th Block                51            23
Koramangala 7th Block                25            25
Lavelle Road                         59            34
MG Road                              53            36
Malleshwaram                         20            14
Marathahalli                         22             2
New BEL Road                          8             8
Old Airport Road                     12             9
Rajajinagar                           3            10
Residency Road                       55            26
Richmond Road                        16            12
Sarjapur Road                        19            22
Shanti Nagar                          9             2
Shivajinagar                          7             8
St. Marks Road                       40            22
Ulsoor                               23            30
Whitefield                           47            33
others                               75            47
```

[53]:
```python
df3.plot(kind = 'bar', figsize = (36,8))
```

[53]:
```
<Axes: xlabel='location'>
```



1.21 No. of Votes, Location Wise

[54]:

```
df4 = df[['location', 'votes']]
df4.drop_duplicates()
df5 = df4.groupby(['location'])['votes'].sum()
df5 = df5.to_frame()
df5 = df5.sort_values('votes', ascending=False)
df5.head()
```

[54]:

```
                       votes
location
Koramangala 5th Block  2214083
Indiranagar            1165909
Koramangala 4th Block   685156
Church Street           590306
JP Nagar                586522
```

[56]:

```
df.head()
```

[56]:

```
                    name online_order book_table  rate  votes      location  \
0                  Jalsa          Yes        Yes   4.1    775  Banashankari
1         Spice Elephant          Yes         No   4.1    787  Banashankari
2        San Churro Cafe          Yes         No   3.8    918  Banashankari
3  Addhuri Udupi Bhojana           No         No   3.7     88  Banashankari
4          Grand Village           No         No   3.8    166  Basavanagudi

       rest_type                        cuisines  Cost2plates    Type
0  Casual Dining  North Indian, Mughlai, Chinese        800.0  Buffet
1  Casual Dining                          others        800.0  Buffet
2         others                          others        800.0  Buffet
3    Quick Bites      South Indian, North Indian        300.0  Buffet
4  Casual Dining                          others        600.0  Buffet
```

1.22 Visualizing Top Cuisines

[57]:

```
df6 = df[['cuisines', 'votes']]
df6.drop_duplicates()
df7 = df6.groupby(['cuisines'])['votes'].sum()
df7 = df7.to_frame()
df7 = df7.sort_values('votes', ascending=False)
df7.head()
```

[57]:

```
                          votes
cuisines
others                 11542182
North Indian             516310
North Indian, Chinese    258225
```

```
South Indian             161975
North Indian, Mughlai    103706
```

[58]:

```
df7 = df7.iloc[1:, :]
df7.head()
```

[58]:

```
                        votes
cuisines
North Indian           516310
North Indian, Chinese  258225
South Indian           161975
North Indian, Mughlai  103706
Chinese                101728
```

[ ]:

```
```

[ ]:

```
```