Tasks

Learners have to develop a dashboard to support the answers to the following questions and suggestions for places for newer restaurants.

Problem Statement

You are hired as a consultant data analyst by Zomato where the team is looking for expansion and opening restaurants. Your task is to come up with strategies/suggestions about opening newer restaurants.

Objective Questions:

1. What is the total no. of tables present in the data?

   2 (Raw data , Country Description)

2. What is the total no. of attributes present in the data?

   20(Raw data)+2(Country Description)

3. How many categorical columns are there in the data? [Search about categorical and continuous data, and try to answer this question]

   Categorical data refers to a form of information that can be stored and identified based on their names or labels. It is a type of qualitative data that can be grouped into categories instead of being measured numerically.

   This data type is made up of categorical variables that show things like a person's gender, hometown, and so on. Categorical measurements are not given in numbers but rather in natural language descriptions.

   There are 8 categorical columns in data which are:

   - Country code
   - City
   - Locality
   - Has_table_booking
   - Has_Online_delivery
   - Is_delivering_now
   - Switch_to_order_menu
   - Datekey_opening

4. The data consists of some inconsistent and missing values so ensure that the data used for further analysis is cleaned.

   The inconsistent values were in date column which were cleaned up by first using the text to columns feature and then passing it under the date function to convert it into date format .

   There were some inconsistent values in cuisines with some blank cells which were taken care by removing the particular rows

5. Using the LookUp functions, fill up the countries in the original data using the country code.

   =INDEX('country description'!$A$2:$B$16,MATCH('Raw Data'!$C9523,'country description'!$A$2:$A$16,0),2)

6. Create a table to represent the number of restaurants opened in each country.

    - Total number of restuarants : 9527
    - India leads with largest number of restraunts (8643)
    - Canada has the least number of restaurants :4

Row Labels	Count of RestaurantID
Australia	24
Brazil	60
Canada	4
India	8643
Indonesia	21
New Zealand	40
Philippines	22
Qatar	20
Singapore	20
South Africa	60
Sri Lanka	20
Turkey	34
United Arab Emirates	60
United Kingdom	80
United States of America	419
Grand Total	**9527**

7. Also, the management wants to look at the number of restaurants opened each year, so provide them with something here.

    - Restaurants opened each year from 2010 -2018 are fairly constant at a average of 1058 restaurants each year
    - The most restaurants opened were in 2018 at 1101 restaurants

- In 2012 least number of restaurants were opened at 1019

45	no of restraunts opened each year	
46	**Row Labels**	**Count of RestaurantID**
47	2018	1101
48	2017	1082
49	2016	1025
50	2015	1020
51	2014	1048
52	2013	1057
53	2012	1019
54	2011	1096
55	2010	1079
56	**Grand Total**	**9527**
57		

8. What is the total number of restaurants in India in the price range of 4?

Count of RestaurantID	**Column Labels**	
Row Labels	**4**	**Grand Total**
India	388	388
Grand Total	**388**	**388**

On the other hand we could also use COUNTIF function to calculate the same.

=COUNTIFS('Raw Data'!D2:D9528,"india",'Raw Data'!Q2:Q9528,"4")

9. What is the average number of voters for the restaurants in each country according to the data?

   With respect to my analysis ,UAE (407.41) has the maximum number of votes where as Brazil got 19.61 votes and stands at the least while the total average over the whole dataset was found out to be 156.87

Row Labels	Average of Votes
Australia	111.42
Brazil	19.62
Canada	103.00
India	137.27
Indonesia	772.10
New Zealand	243.03
Philippines	407.41
Qatar	163.80
Singapore	31.90
South Africa	315.17
Sri Lanka	146.45
Turkey	431.47
United Arab Emirates	493.52
United Kingdom	205.49
United States of America	435.56
Grand Total	**156.88**

10. Calculate the average rating for all the restaurants that have price_range < 4 and provide online delivery. Use only the “IF” function, Logical Operators, and Aggregation functions to solve this problem. **[Note: Don’t use Conditional aggregation in this question.]**

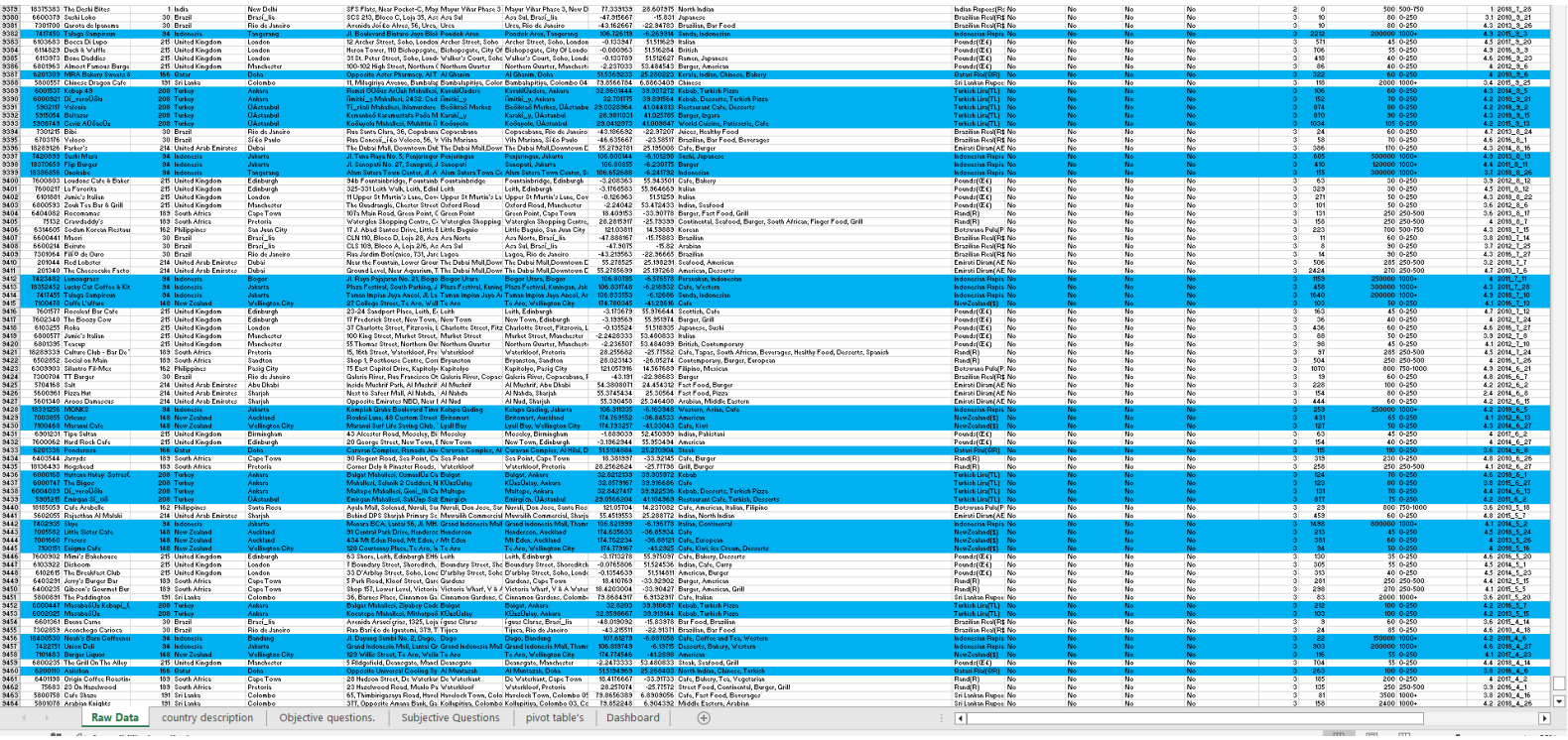
    Using combined function of ‘if’ along with ‘and’ we create a column (Raw Data'!AD:AD) to help pick out ratings from entries where the condition satisfies and then using average function on the same column to find the average which comes out to be 3.2738

66	10)	average rating for all the restaurants that have price_range < 4 and provide online delivery							
67									
68		3.27381151	3.27381151						

11. Using Conditional formatting highlight the rows of restaurants that are located in the countries or cities that you've suggested to the management for opening new restaurants.

- Select raw dataset
- Home>conditional formatting>manage rules> New rule
- Select use formula to determine
- =$D2=" *country_Name* "
- Select format options >ok>apply>close

=Highlighted with blue



12. Create a new customized price column that consists of the abbreviation/symbol of the currency along with the Average_cost_for_two value. [Use string operations to do this task]

=CONCAT(MID(L2,AA2+1,AB2-AA2-1),IF(D2="India","","."),S2)

{ In rows with country as India the currency has symbol has period(.) with it which makes it easy to read but with other currencies it's not the case so just to make the data readable I am using the if condition }

(Raw Data'!AC:AC)

13. How can you create an array formula in Excel or Google Sheets to count the number of restaurants listed that do not offer online delivery, are in the lowest price range, and have an average cost for two people less than or equal to 250 Indian Rupees?

To count with multiple conditions we could use countifs which returns the count after checking multiple conditions (online_delivery=no ,price_range=1 ,average cost for 2 in inr<=250)

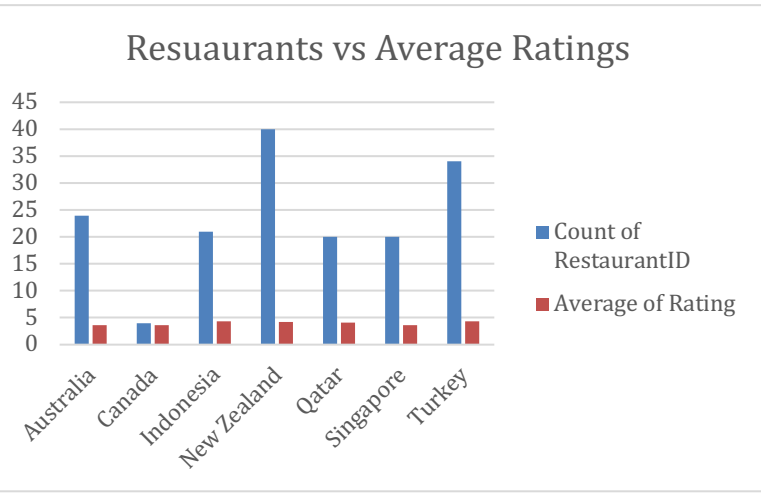
=COUNTIFS('Raw Data'!N2:N9528,"No",'Raw Data'!Q2:Q9528,"1",'Raw Data'!AE2:AE9528,"<=250")column AE is average cost for 2 in inr

There are **1676** restaurants which provide don't provide online delivery, are in the lowest price range and have an average cost for two less than or equal to 250 .

Subjective Question:

1. Suggest a few countries where the team can open newer restaurants with lesser competition. Which visualization/technique will you use here to justify the suggestions?

Row Labels	Count of Restaurai	Average of Rating
Australia	24	3.7
Brazil	60	3.8
Canada	4	3.6
India	8643	2.8
Indonesia	21	4.3
New Zealand	40	4.3
Philippines	22	4.5
Qatar	20	4.1
Singapore	20	3.6
South Africa	60	4.2
Sri Lanka	20	3.9
Turkey	34	4.3
United Arab Emirates	60	4.2
United Kingdom	80	4.1
United States of America	419	4.0
Grand Total	**9527**	**2.9**



Creating a pivot table with countries in rows ,count of restaurant's and average ratings in columns we get the following pivot table which then helps us narrow based on count of restaurants and average ratings in those countries .

We then can choose countries which have low number of restaurants in them while having a high average rating overall so that the chances of restaurants in those countries being successful will be higher and higher average ratings.

Choosing countries which have average ratings of more than 3.5 while having the count of restaurants among them below 40 , these are the countries where we could have a advantage for opening new restaurants.

2. Come up with the names of States and cities in the suggested countries suitable for opening restaurants.

Row Labels	Count of RestaurantID	Average of Rating
Australia	**24**	**3.7**
Beechworth	1	4.6
Tanunda	1	4.4
Palm Cove	1	4.4
Trentham East	1	4.1
East Ballina	1	4.1
Huskisson	1	4.1
Lakes Entrance	1	3.8
Hepburn Springs	2	3.8
Middleton Beach	1	3.8
Forrest	1	3.7
Inverloch	1	3.7
Phillip Island	1	3.7
Victor Harbor	1	3.6
Dicky Beach	1	3.6
Lorn	1	3.6
Flaxton	1	3.5
Macedon	1	3.5
Armidale	1	3.5
Penola	1	3.4
Balingup	1	3.2
Mayfield	1	2.9
Paynesville	1	2.6
Montville	1	2.4
Canada	**4**	**3.6**
Vineland Station	1	4.3
Chatham-Kent	1	3.7
Yorkton	1	3.3
Consort	1	3.0
Indonesia	**21**	**4.3**
Jakarta	16	4.4
Tangerang	2	4.3
Bandung	1	4.2
Bogor	2	3.9
New Zealand	**40**	**4.3**
Auckland	20	4.3
Wellington City	20	4.3
Qatar	**20**	**4.1**
Doha	20	4.1
Singapore	**20**	**3.6**
Singapore	20	3.6
Turkey	**34**	**4.3**
Ankara	20	4.3
ÛÁstanbul	14	4.3

To come up with the names of states an cities ,We can find this by creating a pivot table with countries and cities in rows with count of restaurants and average of ratings in columns which in turn gives us the cities with number of restaurants along with average rating in those cities . also we can then sort the pivot table based on average ratings which then would help making informed decisions easier .From here we could find cities with high average ratings and low number of restaurants.

3. According to the countries you suggested, what is the current quality regarding ratings for restaurants that are open there?

Row Labels	Count of RestaurantID	Average of Rating
Australia	24	3.7
Canada	4	3.6
Indonesia	21	4.3
New Zealand	40	4.3
Qatar	20	4.1
Singapore	20	3.6
Turkey	34	4.3
Grand Total	**163**	**4.1**

We can create a pivot table with countries in rows(filtering with suggested countries) and count of restaurants along with average of ratings in those countries,
The least quality is in Canada and Singapore with average ratings of 3.6 while the most quality is maintained at 4.3 in Indonesia, new Zealand and turkey . the overall ratings across these countries is about 4.1.

I would first recommend to focus financial investments in Indonesia ,Qatar and turkey as the ratings there are higher which would result somewhat quicker return of investments(in accordance with ratings) and then we could move to other countries with little lower average ratings.

4. Also, what is the current expenditure on food in the suggested countries, so we can keep our financial expenditure in control?

Row Labels	Count of RestaurantID	Average of Averag	Average of average cost for 2 in inr	Average of average cost for 2 in usd
⊞ Australia	24	24.08	1362.64	16.14
⊞ Canada	4	36.25	2253.30	26.83
⊞ Indonesia	21	281190.48	1546.55	18.28
⊞ New Zealan	40	69.75	3645.14	43.25
⊞ Qatar	20	223.75	5155.20	60.41
⊞ Singapore	20	155.75	10061.45	119.93
⊞ Turkey	34	84.85	209.59	2.46

With the help of pivot table we could plot countries in rows (filtering the suggested countries) along with columns of count of restaurants average of 2 in their respective currencies as well as in INR and USD.

With the above data in sight we could say that Singapore has the highest (₹ 10061) expenditure in food while turkey has the lowest (₹209) expenditure in food this in turn helps us to prioritise where to put up financial resources which are countries like Singapore and Qatar as the average cost for 2 people is way higher giving high return on investments whereas turkey Australia and Indonesia are not very suitable options for the same as they have very low average value for 2 as compared to other countries

5. Come up with the names of restaurants from the recommended states that are our biggest competitors and also those that are rated in the lower brackets, i.e. 1-2 or 2-3.

Count of RestaurantID	Column Labels
Row Labels	2-3
Australia	3
Pier 70	1
Poets Cafe	1
Star Buffet	1
New Zealand	1
De Fontein Belgia	1

Rating	4-5	
Row Labels	Count of Cuisines	Average of Rating
Australia	**6**	**4.28**
Beechworth	1	4.60
Tanunda	1	4.40
Palm Cove	1	4.40
East Ballina	1	4.10
Trentham East	1	4.10
Huskisson	1	4.10
Canada	**1**	**4.30**
Vineland Station	1	4.30
Indonesia	**17**	**4.44**
Tangerang	1	4.90
Jakarta	14	4.46
Bandung	1	4.20
Bogor	1	4.00
New Zealand	**37**	**4.35**
Auckland	18	4.43
Wellington City	19	4.28
Qatar	**11**	**4.35**
Doha	11	4.35
Singapore	**3**	**4.10**
Singapore	3	4.10
Turkey	**30**	**4.39**
ÛÁstanbul	12	4.39
Ankara	18	4.38
Grand Total	**105**	**4.36**

We can find this by creating two different pivot tables adding countries and restaurants names in rows with ratings in columns.

Filtering out countries with suggested countries and applying filter on ratings with range less than 3 gives us restaurants which are rated in the lower brackets which are 3 in Australia and just 1 in new Zealand.

For finding our biggest competitors we could do the same but apply filter on rating column for 4-5 which would then give us restaurants which are in high average rating category which would be out biggest competitors .

With the above data in sight the restaurants which are our biggest competitors in the above suggested countries are:

Australia : 1918 Bistro & Grill, Bridge Road Brewers, Vivo Bar and Grill
Canada : Lake House Restaurant
Indonesia : Satoo - Hotel Shangri-La, Sushi Masa, Talaga Sampireun
New Zealand : Depot Eatery and Oyster Bar, Miann, Milse
Qatar: Gymkhana,Mainland China Restaurant,Zaffran Dining Experienc
Singapore: Al'frank Cookies,Cut By Wolfgang Puck,Fratini La Trattoria
Turkey:Draft Gastro Pub,Gaga Manjero,Starbucks

6. Which cuisines should we focus on in the newer restaurants to get better feedback? Does the choice of cuisines affect the restaurant ratings?

Row Labels	Average of Rating
Indonesia	**4.44**
4-5	**4.44**
Asian, Indonesian, Western	4.60
Burger	4.40
Cafe, Coffee and Tea, Western	4.20
Cafe, Italian, Coffee and Tea, Western, Indonesian	4.60
Cafe, Western	4.30
Desserts, Bakery, Western	4.60
French, Western	4.30
Italian, Continental	4.10
Japanese	4.20
Japanese, Sushi, Ramen	4.40
Peranakan, Indonesian	4.00
Seafood, Western	4.00
Sunda, Indonesian	4.90
Sushi, Japanese	4.90
Western, Asian, Cafe	4.20
Turkey	**4.39**
4-5	**4.39**
Bar Food	4.90
Burger, Izgara	4.30
Cafe	4.36
Cafe, Desserts	4.30
Desserts	4.70
Desserts, Bí_rek	4.70
Kebab	4.55
Kebab, Desserts, Turkish Pizza	4.30
Kebab, Izgara	4.40
Kebab, Turkish Pizza	4.33
Kebab, Turkish Pizza, Dí_ner	4.40
Pizza	4.70
Restaurant Cafe	4.00
Restaurant Cafe, Desserts	4.20
Restaurant Cafe, Turkish, Desserts	4.20
Steak	4.10
Turkish	4.10
Turkish Pizza	4.30
World Cuisine	4.90
World Cuisine, Mexican, Italian	4.40
World Cuisine, Patisserie, Cafe	4.20
Qatar	**4.35**
4-5	**4.35**
Chinese	4.90
Indian	4.53
Qatar	**4.35**
4-5	**4.35**
Chinese	4.90
Indian	4.53
International	4.40
Italian	4.50
Kerala, Indian, Chinese, Bakery	4.00
Pakistani	4.20
Seafood, American	4.00
Steak, American	4.00
Thai	4.30
New Zealand	**4.35**
4-5	**4.35**
American	4.10
Asian	4.30
Asian Fusion, Cafe	4.20
Asian, Sushi, Seafood	4.50
Cafe	4.30
Cafe, American	4.60
Cafe, European	4.00
Cafe, European, Mexican	4.40
Cafe, Kiwi	4.30
Cafe, Kiwi, Ice Cream, Desserts	4.00
Chinese	4.30
Desserts	4.90
European	4.50
European, Cafe	4.20
Fast Food	4.50
French, Kiwi	4.40
Ice Cream, Desserts	4.70
Italian	4.55
Italian, Cafe	4.20
Kiwi, European	4.20
Malaysian	4.20
Mediterranean, Cafe, European	4.20
Seafood, Kiwi	4.45
Taiwanese, Street Food	4.40
Thai	4.30
Vietnamese, Fish and Chips	4.30
Canada	**4.30**
4-5	**4.30**
Italian, Mediterranean, Pizza	4.30
Australia	**4.28**
4-5	**4.28**
Australian	4.10
Breakfast, Modern Australian	4.10
Cafe	4.10
Mediterranean, Seafood	4.40
Modern Australian, Australian	4.40
Pizza, Bar Food	4.60
Singapore	**4.10**
4-5	**4.10**
American, Steak	4.00
Bakery	4.20
Italian	4.10
Grand Total	**4.36**

Plotting a pivot table for countries along with cusines in rows with average rating of restaurants as values we get the following pivot table.
In most of these countries typically ,the type of cuisines don't matter for a good feedback .Over 66% of the total number of restaurants in these countries are in the 4-5 rating due to which it is very favourable but then too I

would recommend the marketing team to choose cuisines from high rating restaurants to improve ratings of new restaurants .

7. According to our current data, should we go for online delivery and table booking? Does that affect the customer's ratings?

Rating	4-5			
		Table booking		
	Column Labels			
	No		Yes	
Row Labels	Count of RestaurantID	Average of Rating	Count of RestaurantID	Average of Rating
Australia	6	4.283333333		
Canada	1	4.3		
Indonesia	17	4.441176471		
New Zealand	37	4.351351351		
Qatar	10	4.32	1	4.7
Singapore	3	4.1		
Turkey	30	4.386666667		
Grand Total	**104**	**4.361538462**	**1**	**4.7**

Rating	4-5	
		Online delivery
	Column Labels	
	No	
Row Labels	Count of RestaurantID	Average of Rating
Australia	6	4.283333333
Canada	1	4.3
Indonesia	17	4.441176471
New Zealand	37	4.351351351
Qatar	11	4.354545455
Singapore	3	4.1
Turkey	30	4.386666667
Grand Total	**105**	**4.364761905**

Creating 2 different pivot tables for table bookings and online delivery and filtering out the data from ratings 4-5 gives us the following insights .

For table bookings in the suggested countries , only 1 restaurant provides with the facility and it surely does affect the rating so **I would recommend having table booking facilities at these countries** for improved ratings as it is a trend with whole dataset.

For online delivery there are no restaurants in suggested countries which have the online delivery facility while considering the whole dataset the trend depicts restaurants with online delivery have higher ratings on an average so yes I would want them to have online delivery facilities.

8. Should the team keep the rate of cuisines higher? Will that affect the feedback? According to our data are the rates of cuisines and ratings, correlated?

correleation->	0.465158804

Using the co-relation function we can find out the co-relation between two columns which then returns a value between (-1 to 1) -1 standing for them being negatively related ,0 being no relation and 1 standing for positively related which if value of column 1 increases then the value of column 2 also increases .

On using the function we can see that it returns **0.46** which is a reflects that the 2 columns (price range and ratings) related with a good strength which in turn suggests that the higher the price range it is more susceptible that the ratings would be higher too .

#=CORREL('Raw Data'!Q2:Q9528,'Raw Data'!U2:U9528)

9. What is the distribution of the number of restaurants of different price ranges in all the countries?

Count of RestaurantID	Column Labels				
	1	2	3	4	Grand Total
Row Labels					
Australia	4	14	5	1	24
Brazil	2	7	16	35	60
Canada		3		1	4
India	4286	2858	1111	388	8643
Indonesia		1	20		21
New Zealand	3	4	17	16	40
Philippines		1	12	9	22
Qatar		1	5	14	20
Singapore		1	5	14	20
South Africa		4	17	39	60
Sri Lanka		6	11	3	20
Turkey		11	18	5	34
United Arab Emirates		9	29	22	60
United Kingdom	4	28	32	16	80
United States of America	124	165	107	23	419
Grand Total	**4423**	**3113**	**1405**	**586**	**9527**

For this query we create a pivot table and put countries in rows and price range in columns .

- Price range 1: 4423 (46%)
- Price range 2 : 3313 (32%)
- Price range 3 : 1405 (14%)
- Price range 4: 586 (6%)

As above we have the distribution of number of restaurants in different price ranges in all the countries , we get some insights from this data .

From the above data it is clear that India (8643) and USA (419) has the greatest number of restaurants in the following distribution of restaurants in different price ranges which makes it more probable that they'll also have the greatest number of restaurants in across all the price ranges on the other hand Canada has the least (4) throughout the distribution making the least

Excluding India and USA from the above data, we can conclude that most of the remaining countries don't have many restaurants which are in price range of 1 i.e. for people trying to find extremely affordable food in many of these countries won't have much luck for the same.

As for in price range 2 this is the only price range where all the countries have to offer restaurants, with UK, Australia, turkey to offer most of these choices (excluding India and USA). On the other hand, people have very limited options in countries like Indonesia, Philippines, Qatar and Singapore as they only have 1 restaurant in the price range of 2.

Now for price range 3 & 4 this is where every country has many options.

In price range 3(also known as fine dine restaurants), except Canada every country has many options to choose from with Indonesia, UAE, UK having the most options and Australia, Qatar, Singapore having the least options of 5 each

Talking about the price range 4, this is the category where the restaurants are categorised as luxury restaurants. The distribution of restaurants across various countries is variable as in some countries this category consists of the most number of restaurants from this category throughout the country like Qatar, South Africa, Singapore and Brazil whereas in some countries this category consists of the least restaurants like Australia, Canada, Sri Lanka and Turkey have the least restaurants from this category.

This insights provides us with countries which have the domination in some particular countries like India and USA whereas the lack of adequate

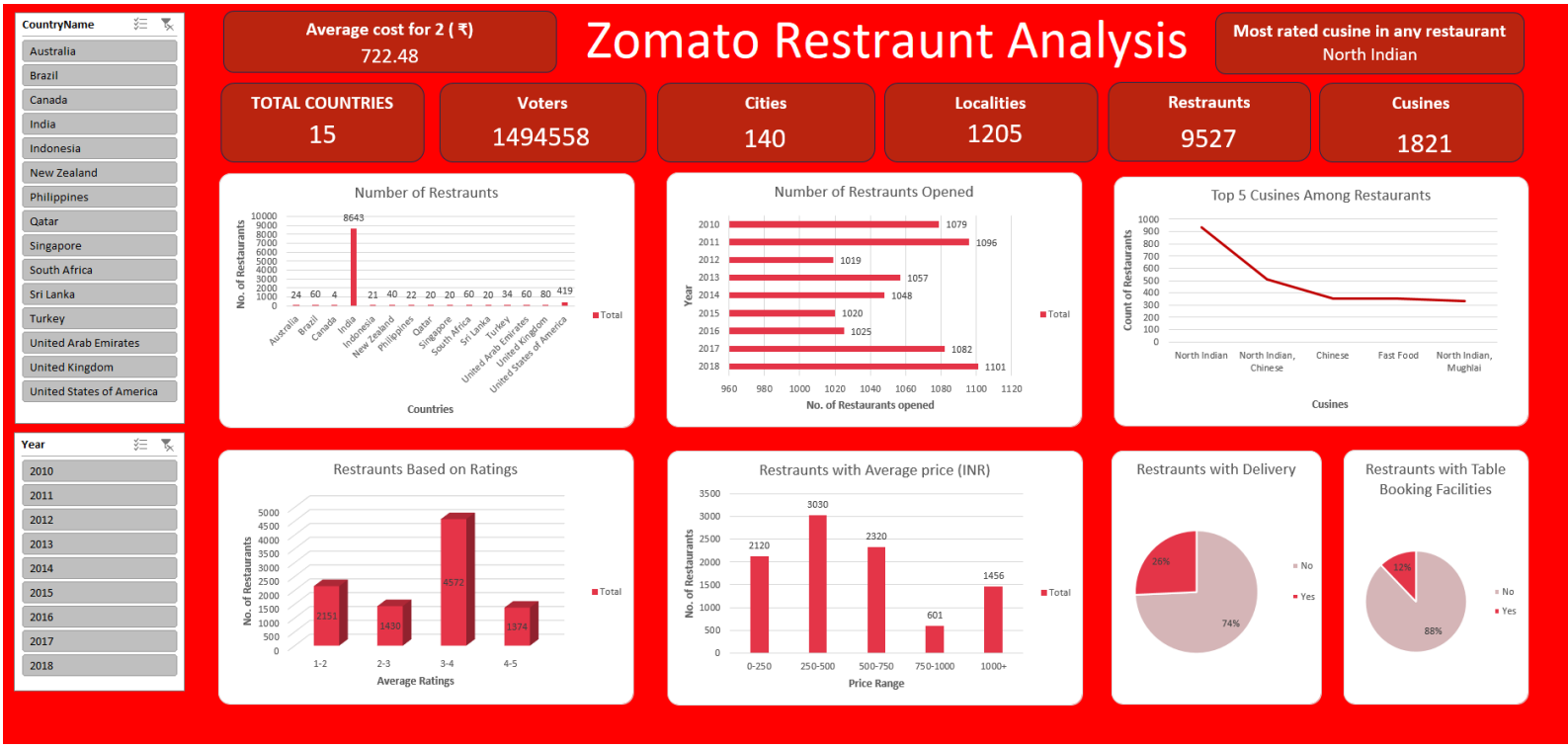
competition in Australia, Canada, Indonesia, Philippines, Qatar, Singapore and Turkey making these countries favourable for new restaurants as people would have more options to select from , whereas making India and USA the worst choices to open new restaurants in the first place as there already is ample of competition .

10. Explain your approach in brief for suggesting countries/cities in order to open new restaurants, if the objective and subjective questions would have not been given to assist you. **[you have to give bullet pointers in order to answer this question]**

After doing some basic data cleaning , filling in the blank values and creating a basic model / dataset and then would have followed the following steps :

- First I would have chosen the country with least number of restaurants.
- Then I would have taken in consideration the amount of money people spend eating out and how frequently (might need some more data with research)
- Then I would find localities with decent footfall of people so that people who seem to talk by notice and try for something new.
- Keeping surroundings clean along with maintaining the quality of food ,also I would introduce something like todays special of special for this week so that I could pull people in keeping them curious about what could be new this or next weekend (recurring customers)
- the price of restaurants nearby should be competitive but also reasonable to keep a steady footfall through out the day

DASHBOARD


CountryName
Australia
Brazil
Canada
India
Indonesia
New Zealand
Philippines
Qatar
Singapore
South Africa
Sri Lanka
Turkey
United Arab Emirates
United Kingdom
United States of America
Year
2010
2011
2012
2013
2014
2015
2016
2017
2018
Average cost for 2 (₹)
722.48
Zomato Restraunt Analysis
Most rated cusine in any restaurant
North Indian
TOTAL COUNTRIES
15
Voters
1494558
Cities
140
Localities
1205
Restraunts
9527
Cusines
1821
Number of Restraunts
No. of Restaurants
Countries
Total
Number of Restraunts Opened
Year
No. of Restaurants opened
Total
Top 5 Cusines Among Restaurants
Count of Restaurants
North Indian
North Indian, Chinese
Chinese
Fast Food
North Indian, Mughlai
Cusines
Restraunts Based on Ratings
No. of Restaurants
Average Ratings
Total
Restraunts with Average price (INR)
No. of Restaurants
Price Range
Total
Restraunts with Delivery
No
Yes
Restraunts with Table Booking Facilities
No
Yes