

Objective Questions:

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

There are total 2 tables present in the data, namely - Raw Data about the restaurants(Raw Data) table & Country Description(country description) table.

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

There are a total of 21 unique attributes present in both the tables.

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

Raw Data

Categorical columns	Continuous columns
RestaurantID	Longitude
Restaurant Name	Latitude
Country Code	Average_Cost_for_two
City	Votes
Address	
Locality	
Locality Verbose	
Cuisines	
Currency	
Has_Table_booking	
Has_Online_delivery	
Is_delivering_now	
Is_delivering_now	
Switch_to_order_menu	
Price_range	
Rating	
Datekey_Opening	

Country Description

Categorical columns
Country Code
Country Name

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

Removed duplicates by selecting whole range and searching by all the selected columns.

Checked for any N/A values [=COUNTIF(A:A,"N/A")] or missing values [=COUNTBLANK(A:A)] present in the dataset in every attribute.

Handled those missing values by using the measures of central tendency(Mean, Median, Mode).

For eg:-

Cuisine values were missing for some of the Australian restaurants. A pivot table was created for distinct cuisines and count of distinct cuisines filtered by each country. The missing values were then replaced by the cuisine which had the highest count of cuisine when filtered countrywise.

Checked for any "0" values, as found in the latitudes and longitudes columns. Replaced them with the avg of the values by each city without considering the 0 values in the avg. Also for average_cost_for_two column, replaced the "0" values by the avg of the values by each city.

Checked for any outliers present for each attribute by inserting a pivot table and sorting the result. If present, removed that entry or replaced with mean/median/mode

Checked for proper formatting of each attribute such as Dates and numerical data.

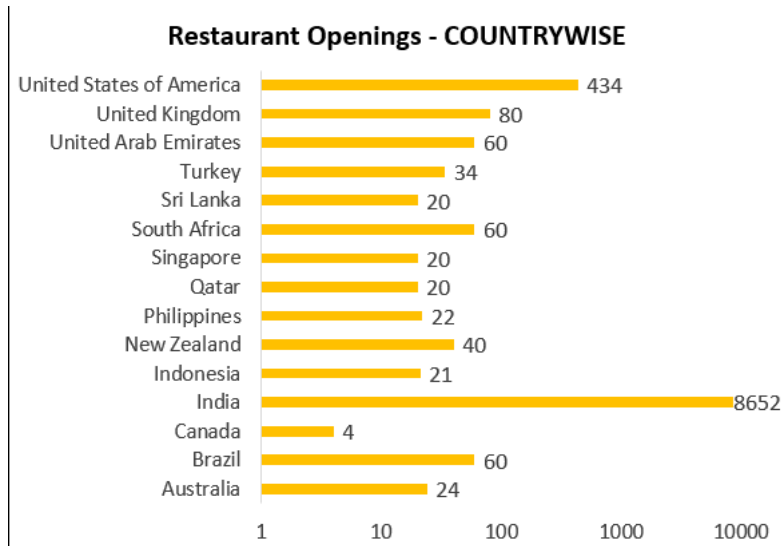
Extracted Year, Month and Day from the Date column.

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

By utilizing the VLOOKUP function - [=VLOOKUP(C2,'country description'!\$A:\$B,2,FALSE)], the countries were populated from the original 'country description' dataset based on their corresponding country codes.

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

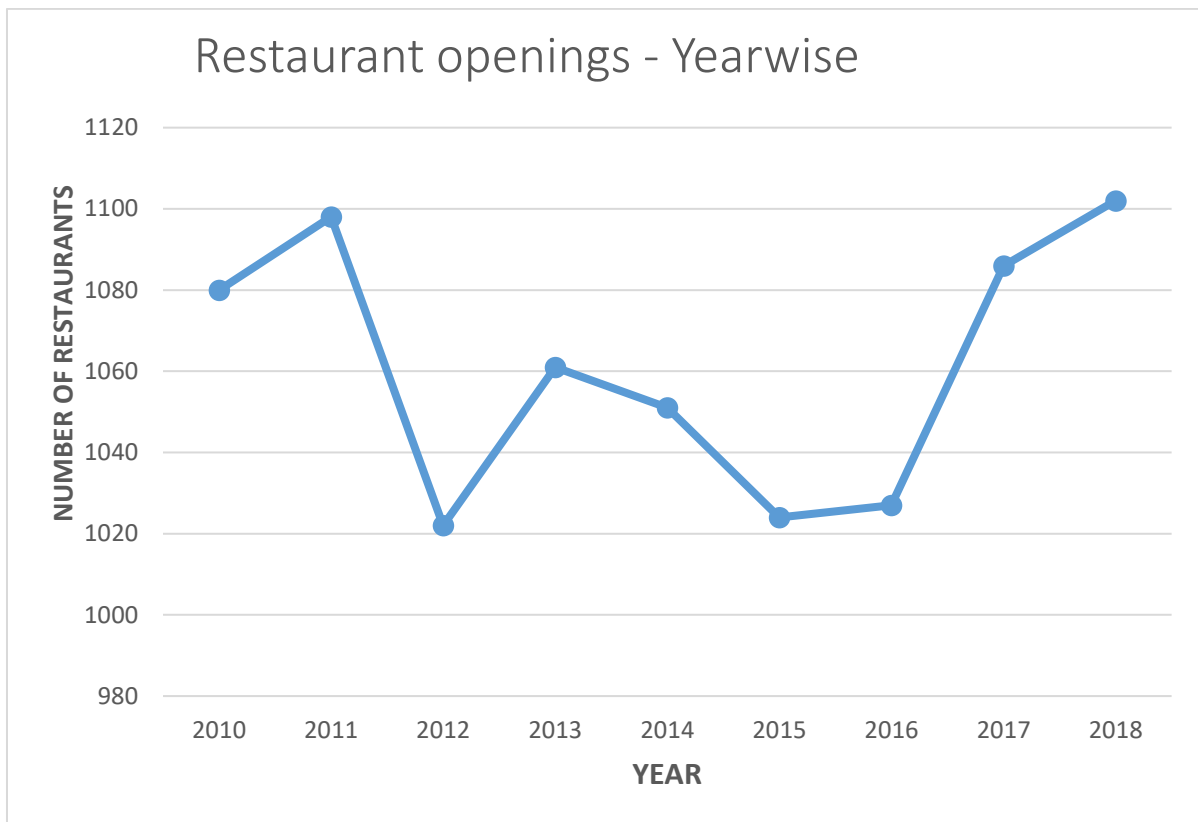
Country	Number of Restaurants
Australia	24
Brazil	60
Canada	4
India	8652
Indonesia	21
New Zealand	40
Philippines	22
Qatar	20
Singapore	20
South Africa	60
Sri Lanka	20
Turkey	34
United Arab Emirates	60
United Kingdom	80
United States of America	434
Grand Total	9551



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

Please find below a pivot table and column chart showcasing the number of restaurants opened each year. Analysis of the chart reveals that the year 2018 witnessed the highest restaurant openings – 1102, whereas the lowest number of restaurant openings occurred in 2012, with a count of 1022.

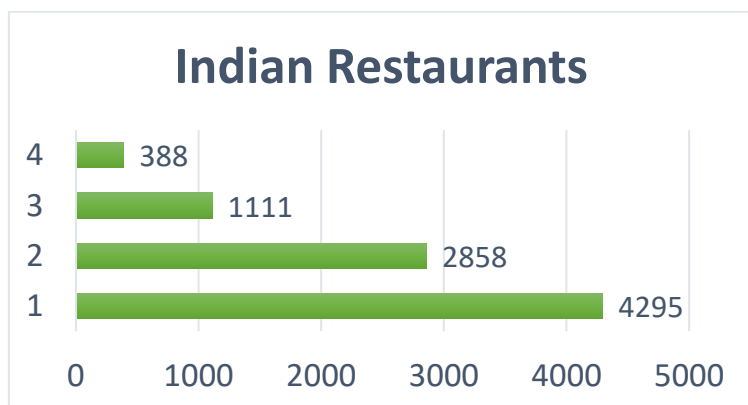
Year	Number of Restaurants
2010	1080
2011	1098
2012	1022
2013	1061
2014	1051
2015	1024
2016	1027
2017	1086
2018	1102
Grand Total	9551



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

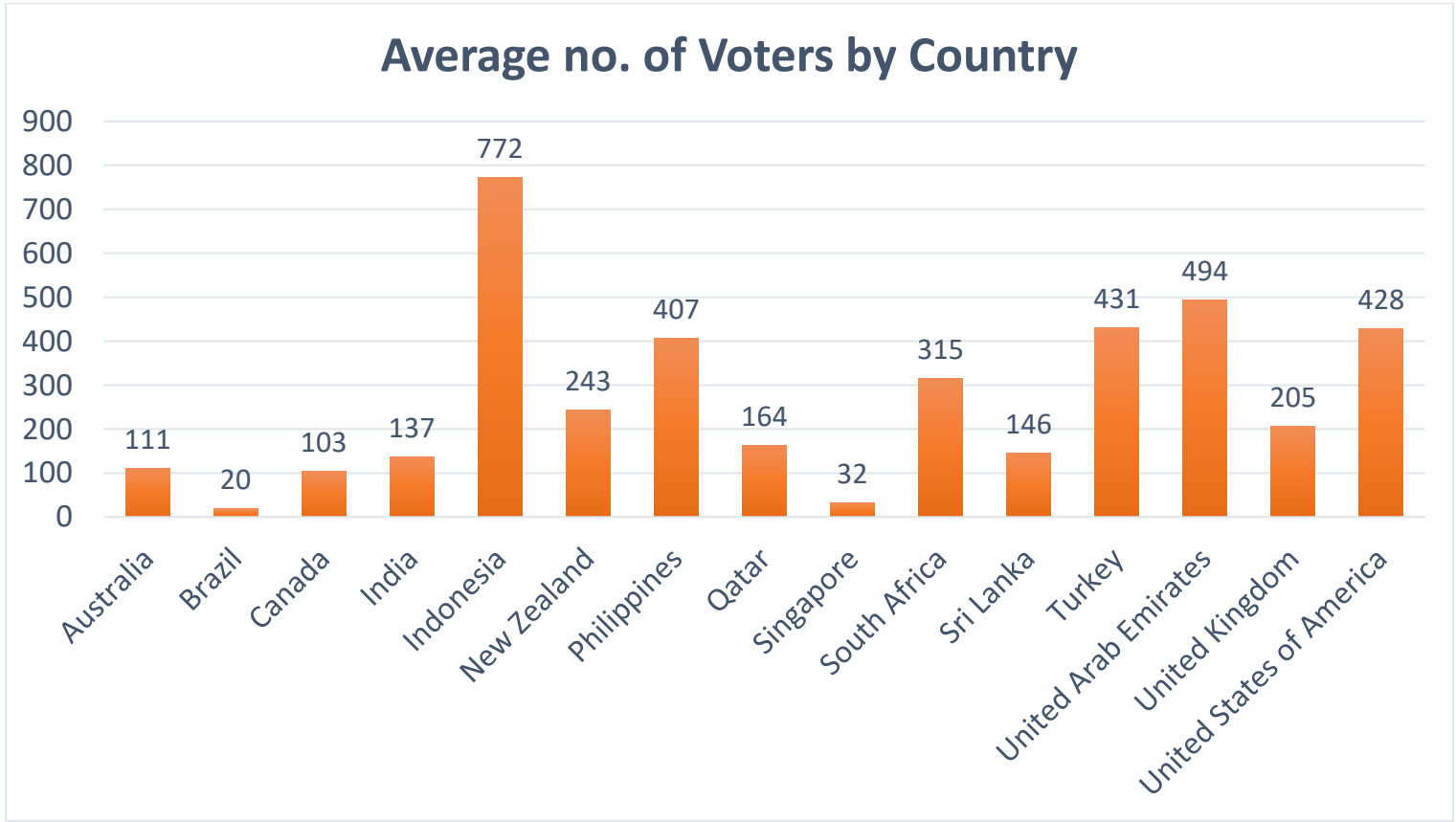
A pivot table was created representing the number of restaurants in each country categorized by their price range. A filter was applied on the country column to show only Indian restaurants with a price_range of 4. Also, find a bar chart showcasing Indian restaurants within all the price ranges. From this chart we can deduce, that there are 388 restaurants in India with a price_range of 4.

Number of Restaurants	Column Labels	
Country	India	Grand Total
4	388	388



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

Country	Average of Votes
Australia	111.4166667
Brazil	19.61666667
Canada	103
India	137.212552
Indonesia	772.0952381
New Zealand	243.025
Philippines	407.4090909
Qatar	163.8
Singapore	31.9
South Africa	315.1666667
Sri Lanka	146.45
Turkey	431.4705882
United Arab Emirates	493.5166667
United Kingdom	205.4875
United States of America	428.2211982



A pivot table was created to find the average number of voters for each country. A clustered column chart was created to showcase the same. Notably, Indonesia boasts the highest average number of voters, indicating a substantial level of engagement and interest. Conversely, Brazil exhibits the lowest average number of voters, suggesting a comparatively lower-level of engagement and interest.

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.]

Used the below formula in column AA, where column S shows price_range and column P shows Yes or no values for online delivery provision

=IF(AND(S2<4,P2="Yes"),W2,"0")

And then took the avg value of all the values populated in column AA to get the required average rating of 3.27 for restaurants that provide online delivery with a price_range less than 4.

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.

Used below formulas in conditional formatting to highlight the rows of restaurant located in these suggested cities.

= \$E2 = “Flaxton”, = \$E2 = “Montville”, = \$E2 = “Panchkula”, = \$E2 = “Pasay city”, = \$E2 = “Paynesville”

= \$E2 = “Princeton”, = \$E2 = “Vineland Station”

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]

To begin with, text to column function is used to split the currency column.

=TEXTSPLIT(N2,"(")

Additionally, a combination of find and left functions are used to extract the currency symbol from the currency column.

=LEFT(AD2,FIND(")",AD2,1)-1)

Furthermore, extracted currency symbol was concatenated with the value of Average_cost_for_two in order to get the required column (AE)

=AE2&" "&V2

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?

Used the unary operator "AND" represented by (*) for counting the restaurants based on the criterias.

{=SUM((('Raw Data'!P2:P9552="No")*('Raw Data'!S2:S9552=1)*('Raw Data'!AG2:AG9552<=250))}

The above formula takes in 3 conditions required for our counting of restaurants.

- Restaurant should not have online delivery
- Are in the lowest price range i.e. 1
- Have avg cost for two people less than 250 Indian Rupees (For this condition, an additional column AF was created wherein each cost was converted to Indian Rupees)

In order for the restaurant to get selected in our count, all of the above three conditions must be met. That’s why, “AND” unary operator was used.

Use CTRL+Shift+Enter to enter the formula as an array formula.

Subjective Questions:

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?

Country	City	Avg_price_range	Avg_rating	Avg price/Avg rating ratio	No. of restaurants
	Vineland				
Canada	Station	4	4.3	0.930232558	1
Philippines	Pasay City	4	4.3666667	0.916030534	3
Australia	Flaxton	3	3.5	0.857142857	1
Australia	Montville	3	2.4	1.25	1
Australia	Paynesville	4	2.6	1.538461538	1
United States of America	Princeton	4	4	1	1
India	Panchkula	4	4.2	0.952380952	1

A Simple dashboard comprising of various below charts can be used to justify the suggestions.

Column Chart (Average Votes by Country) - Compares customer engagement across countries, influencing restaurant success.

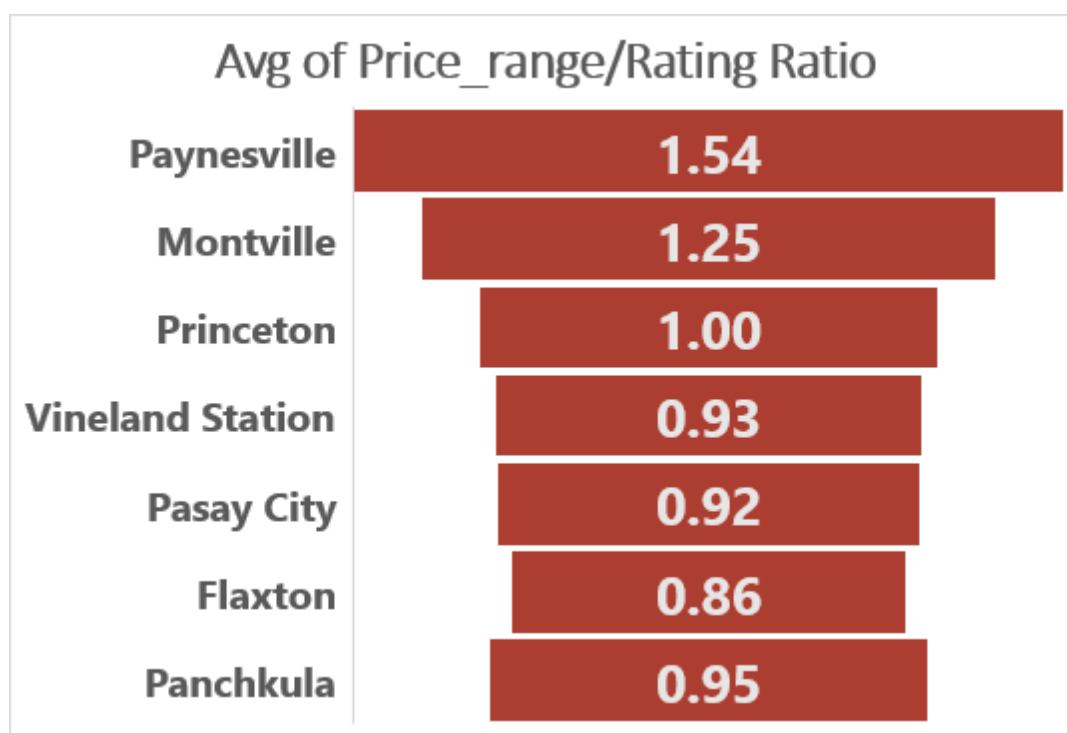
Bar Chart (Number of Restaurants by Country) - Highlights countries with fewer restaurants, indicating lower competition.

Pie Chart (Price Range Distribution) - Shows the distribution of price ranges, identifying markets with higher ranges for competitive pricing.

Line Chart (Restaurants Opened Year-wise) - Tracks the trend of new restaurant openings over time, revealing growth or saturation.

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

Country	City	Avg_price_range	Avg_rating	Avg price/Avg rating ratio	No. of restaurants
Canada	Vineland Station	4	4.3	0.930232558	1
Philippines	Pasay City	4	4.3666667	0.916030534	3
Australia	Flaxton	3	3.5	0.857142857	1
Australia	Montville	3	2.4	1.25	1
Australia	Paynesville	4	2.6	1.538461538	1
United States of America	Princeton	4	4	1	1
India	Panchkula	4	4.2	0.952380952	1



Suggestions –

1. **Vineland Station – Canada**
High Price Range and **Low Competition**: Only one restaurant with a price/rating ratio near the threshold suggests a good market entry opportunity.
2. **Pasay City – Philippines**
High Price Range, Moderate Rating, and **Low Competition**: The price/rating ratio is favourable, and with only three restaurants, there's room for a new entrant.
3. **Flaxton – Australia**
Moderate Price Range and **Low Competition**: The price/rating ratio is close to the threshold, and the single restaurant indicates minimal competition.
4. **Montville – Australia**
Low Rating and **High Price/Rating Ratio**: High ratio and low rating present an opportunity to capture market share with improved offerings.
5. **Paynesville – Australia**

High Price Range and Low Rating: Very high price/rating ratio and only one restaurant suggest a chance to attract customers with better service.

6. **Princeton - United States**

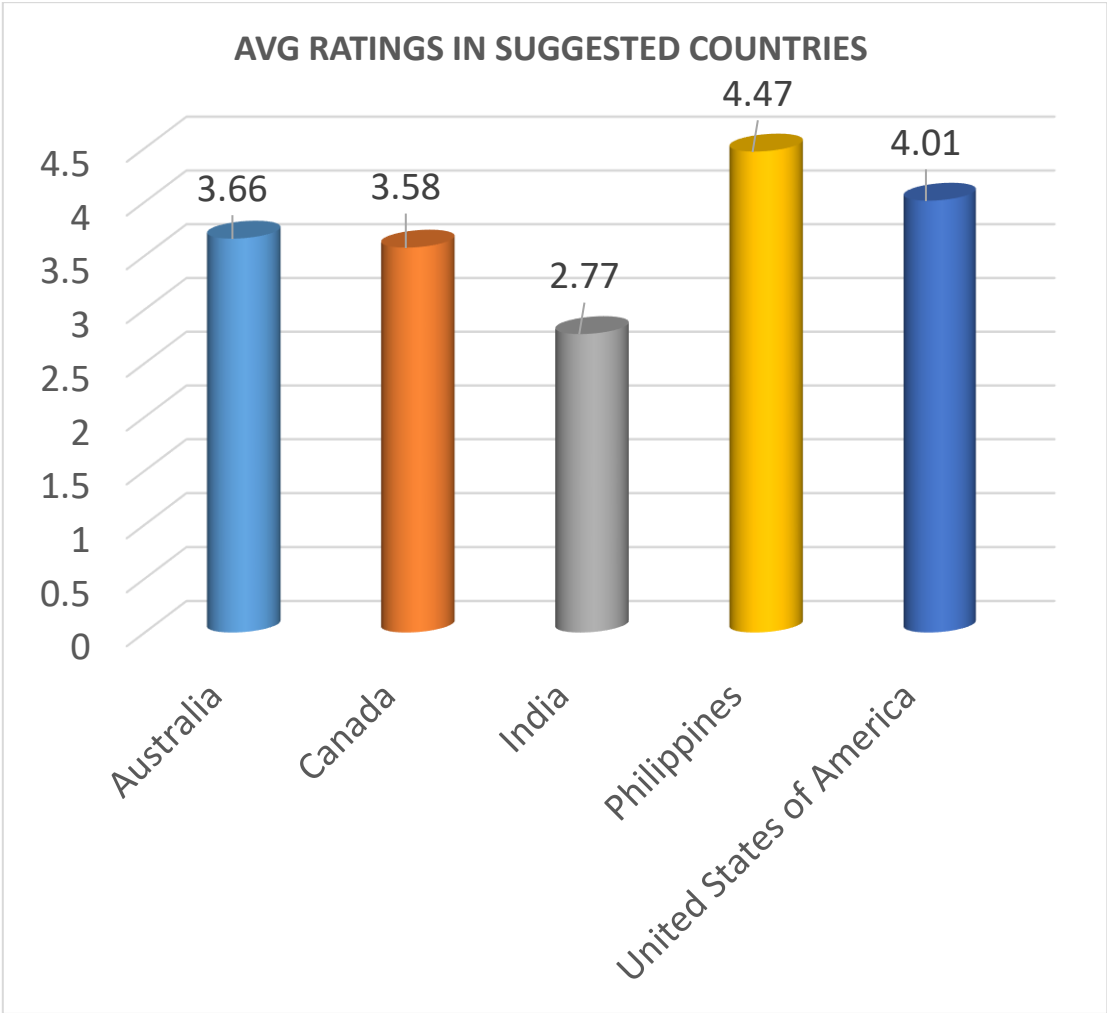
Balanced Ratio and Low Competition: High price range with a balanced ratio and only one restaurant make it a promising location.

7. **Panchkula – India**

High Price Range and Low Competition: High price range and moderate rating with just one restaurant present an opportunity for a new entry.

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

Country	Average of Rating
Australia	3.66
Canada	3.58
India	2.77
Philippines	4.47
United States of America	4.01



Suggestions –

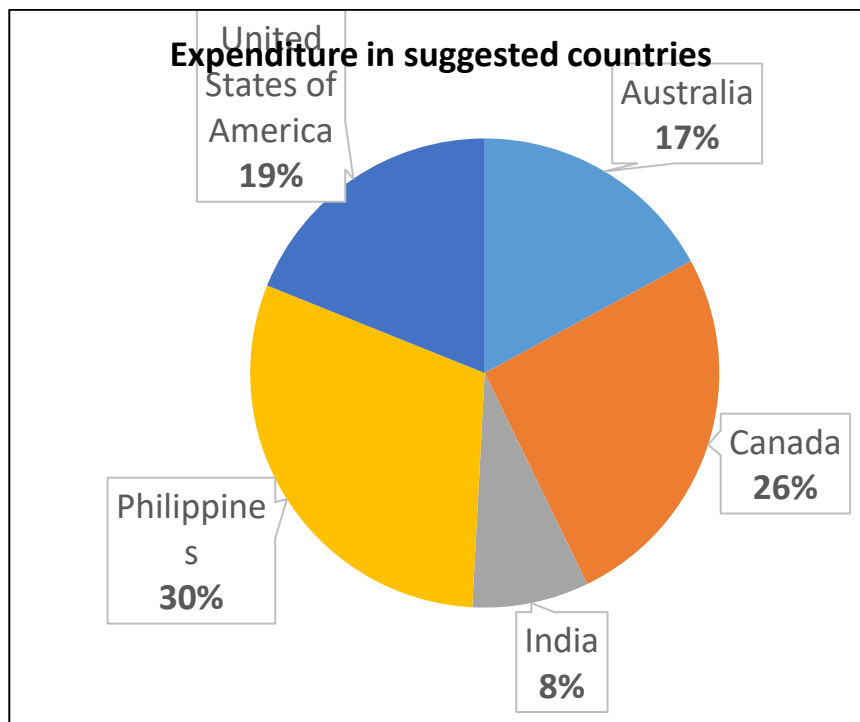
Philippines – Highly recommended since the customers are very much satisfied with the dining experiences available. These customers value quality so maintaining this will be crucial.

United States of America – Strongly consider since this country demonstrates a favourable, well-established yet competitive market. A new restaurant here could thrive if it offers something unique -- whether it's an innovative cuisine, a novel dining concept, or exceptional service.

Australia & Canada – Consider these countries since the average ratings are around 3.60, which is decent, but suggest there might be room for improvement in the current offerings. Opening a restaurant here could be successful if you can identify gaps in the market.

India – Approach with caution since it has the lowest average rating of 2.77, India may represent a more challenging market for a new restaurant. It would be essential to conduct thorough market research to understand the underlying reasons for the low ratings.

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



Above bar chart displays the avg_cost_for_two people in Indian Rupees for the restaurants in the suggested cities. This can be helpful for setting up the price for opening a new restaurant in these countries.

Suggestions –

Philippines (INR 2346): The highest average cost for two suggests a premium dining market. A high-end restaurant focused on luxury, exclusivity, and exceptional service is recommended.

Canada (INR 1995): Canada supports higher spending, ideal for a mid-to-high-end restaurant. A unique or trendy concept emphasizing quality and innovation would resonate with customers.

USA (INR 1467): The USA's diverse market with mid-range pricing offers flexibility. Targeting a specific niche with value, diversity, and strong customer engagement could be successful.

Australia (INR 1325): Mid-range pricing in Australia suggests a preference for casual dining. A restaurant offering good value, quality, and local ingredients at competitive prices would likely do well.

India (INR 624): India’s price-sensitive market favours budget-friendly options. A high-volume quick service or casual dining model focused on affordability and taste is most suitable.

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.

Restaurants at competition	Average of Rating
Australia	2.833333333
Flaxton	3.5
Flaxton Gardens	3.5
Montville	2.4
Poets Cafe	2.4
Paynesville	2.6
Pier 70	2.6
Canada	4.3
Vineland Station	4.3
Lake House Restaurant	4.3
India	4.2
Panchkula	4.2
Hops n Grains	4.2
Philippines	4.366666667
Pasay City	4.366666667
Buffet 101	4
Spiral - Sofitel Philippine Plaza Manila	4.9
Vikings	4.2
United States of America	4
Princeton	4
Blue Point Grill	4

Buffet 101, Spiral - Sofitel Philippine Plaza Manila, Vikings are our biggest competitors when opening a restaurant in Philippines’ Pasay City because of their high ratings (AVG = 4.36). Also, Philippines is the highly recommended country based on rating.

Blue Point Grill restaurant will be the biggest competitor in Princeton city since USA’s market is well established and competitive, and is strongly considered based on rating.

Lake House Restaurant in Canada’s Vineland Station (4.3) and **Hops n Grains** restaurant in Panchkula city of India (4.2) marks them as the sole competitor in respective cities.

Restaurants with 2-3 ratings in each city
Montville
Poets Cafe
Paynesville

Poets Café in Montville and **Pier 70** in Paynesville are still competitive in Australia because they have decent ratings in the range 2-3.

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

Below data shows the cuisines that receive the highest number of votes and average rating country-wise. Based on the country where the restaurant will be established, emphasis should be placed on selecting 3 to 4 key cuisines from the data provided.

Philippines	4.468181818	407.4090909
Filipino, Mexican	4.85	682
Seafood, Filipino, Asian, European	4.2	677
United States of America	4.011290323	428.2211982
American, Desserts, Steak	4.7	3157
Desserts, Bar Food	4.7	3074
Brazilian, Steak	4.6	2324
Burger, Bar Food, Steak	4.9	2238
Australia	3.658333333	111.4166667
Mediterranean, Seafood	4.4	381
Breakfast, Coffee and Tea, Modern Australian	3.7	351
Modern Australian, Australian	4.4	339
Pizza, Bar Food	4.6	237
Canada	3.575	103
Italian, Mediterranean, Pizza	4.3	204
India	2.770550162	137.212552
Italian, American, Pizza	4.8	10934
American, Burger, Cafe	4.7	9667
Finger Food, North Indian, Italian, Continental, Thai, South Indian	4.5	5705

Suggestions –

Philippines - Filipino, Mexican, and Seafood cuisines are highly recommended due to their popularity and high ratings. With an average rating of 4.85 for Filipino and Mexican cuisine and 682 upvotes, these cuisines indicate strong customer preference. Emphasizing these options will likely resonate well with the local population and enhance the restaurant's appeal.

United States of America - American, Steak, and Desserts should be the key focus areas. These cuisines not only enjoy high ratings (up to 4.9) but also receive a substantial number of upvotes, reflecting widespread popularity. Including Bar Food or Brazilian cuisines as additional options could further broaden the restaurant's appeal.

Australia - Mediterranean, Seafood, and Modern Australian cuisines should be prioritized. These options have received strong ratings and decent upvotes, indicating their popularity in the Australian market. Adding Pizza or Bar Food as supplementary offerings could attract a wider customer base.

Canada - Italian, Mediterranean, and Pizza should be the primary focus for a new restaurant in Canada. These cuisines have high ratings (average rating of 4.3) and are likely to perform well in the Canadian market.

India - Italian, American, and Pizza should be at the forefront, with North Indian or Continental cuisine as additional options to cater to local tastes. The significant number of upvotes, especially for Italian and American cuisines, reflects strong customer approval.

Yes, the choice of cuisines significantly affects restaurant ratings. The data shows that highly rated cuisines that align with local preferences tend to receive better feedback and more votes. By focusing on the top-rated and most popular cuisines in each country, restaurants can enhance their appeal, leading to higher customer satisfaction and improved ratings.

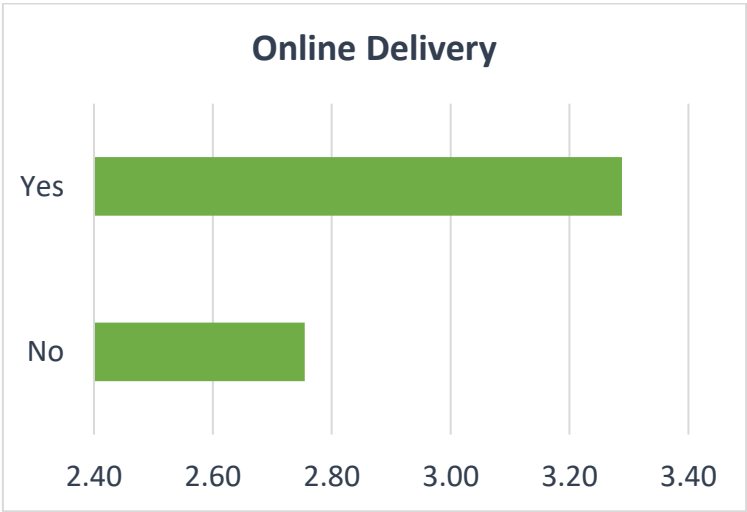
7. According to our current data, should we go for online delivery and table booking? Does that affect the customer’s ratings?

Below bar charts showcase the average rating received to restaurants.
This provides us insights around ratings of restaurants with these features

Table Booking



Online_delivery



Suggestions –

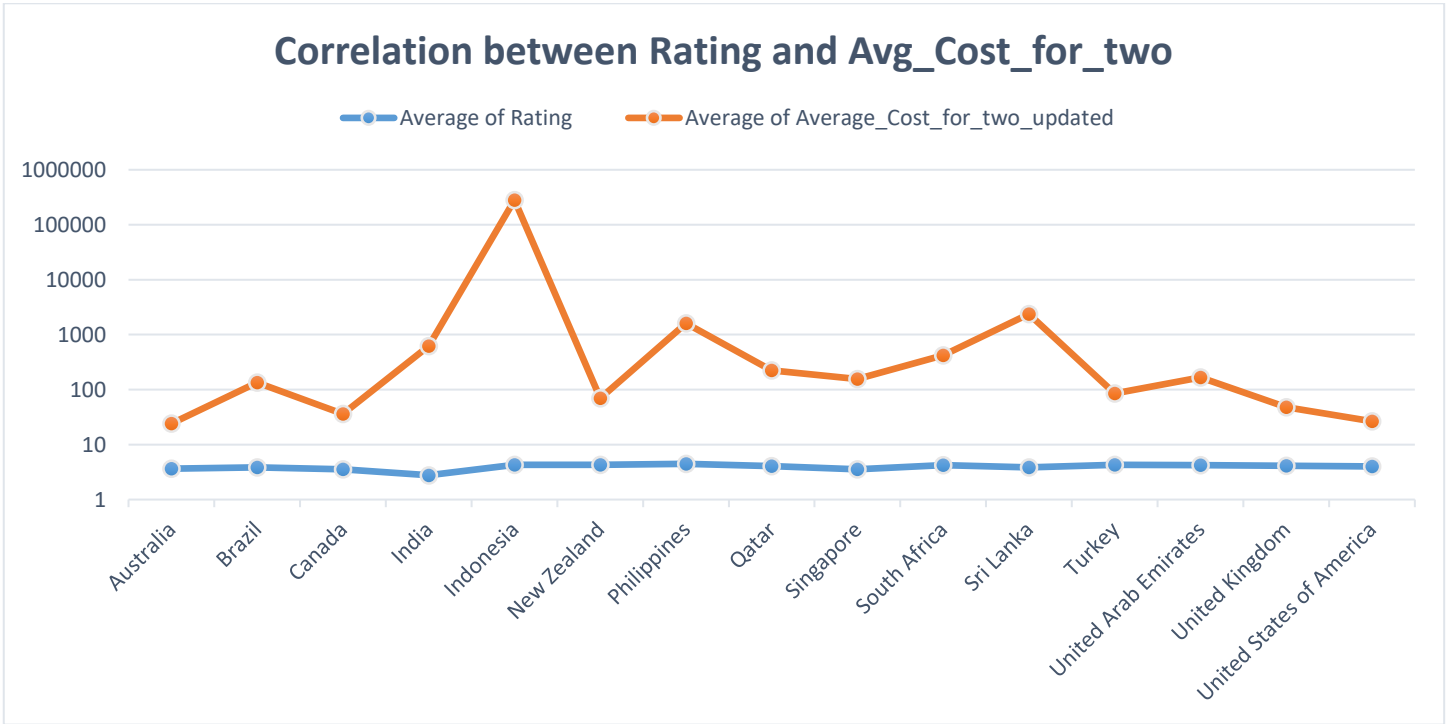
Table Bookings - Customers rate restaurants with table booking options significantly higher (3.48) compared to those without (2.81). This suggests that table booking positively impacts customer satisfaction and ratings.

Online Delivery - Restaurants offering online delivery receive higher ratings (3.29) than those without (2.75). This indicates that online delivery also enhances customer satisfaction and ratings.

Yes, incorporating both online delivery and table booking is advisable. The data shows that both features positively affect customer ratings, suggesting that they would likely lead to improved customer satisfaction and potentially higher ratings for our restaurant.

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?

Price_range	Average of Rating	Average of Average_Cost_for_two_updated
Australia	3.658333333	24.08333333
Brazil	3.846666667	134.6666667
Canada	3.575	36.25
India	2.770550162	624.3209553
Indonesia	4.295238095	281190.4762
New Zealand	4.2625	69.75
Philippines	4.468181818	1606.818182
Qatar	4.06	223.75
Singapore	3.575	155.75
South Africa	4.21	419.7333333
Sri Lanka	3.87	2375
Turkey	4.3	84.85294118
United Arab Emirates	4.233333333	166.4166667
United Kingdom	4.1	47.8125
United States of America	4.011290323	26.66026229

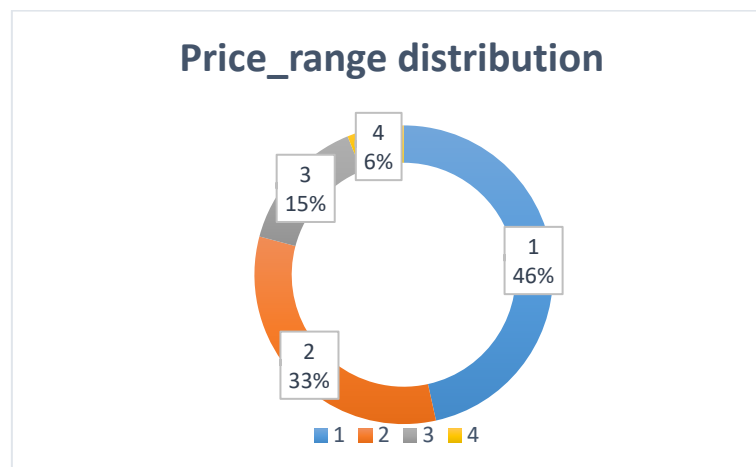


Raising cuisine prices can influence customer feedback, potentially affecting their perception of value and satisfaction. While higher prices may suggest premium quality, they could also discourage some customers if not seen as justified by the experience.

The team should carefully assess target market preferences, competitors' pricing, and the perceived value before adjusting prices. Conducting market research, collecting customer feedback, and tracking satisfaction can offer valuable insights. Striking the right balance between pricing and perceived value is key to maintaining customer satisfaction and loyalty.

Yes, according to the data the rates of cuisines and ratings are correlated with a very weak relationship since, $\text{CORREL('Raw Data'!V:V,'Raw Data'!W:W)} = 0.059$

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



Suggestions –

Price Range 1 (46%, 4,444 restaurants)

- The largest segment, indicating high demand for budget-friendly dining, but also intense competition.
- Differentiate with unique offerings or superior value to stand out in this crowded market.

Price Range 2 (33%, 3,113 restaurants):

- A significant mid-range segment, appealing to those seeking a balance between cost and quality.
- Introduce innovative, quality-driven concepts to attract customers in this established market.

Price Range 3 (15%, 1,408 restaurants):

- A smaller, niche segment catering to customers willing to pay for a premium experience.
- Focus on providing a premium, enhanced dining experience to capture this specialized market.

Price Range 4 (6%, 586 restaurants):

- The smallest, high-end segment, targeting affluent customers with less competition.
- Emphasize luxury and exclusivity to attract high-end clientele in this lucrative market.

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]

- A pivot table was created showcasing countries with their respective cities. They were compared on three parameters mainly – avg_of_price_range, avg_of_rating and the no. of restaurants in the city.
- The choice of opening a new restaurant around the world was directly proportional to avg_of_price_range and inversely proportional to avg_of_rating.
- Therefore, a city/country will be ideal for opening the new restaurant where the existing restaurants have high avg_price_range and comparatively not so high rating (around 2.5-3.5) along with a relatively low no. of restaurants in this criteria.
- So that, a new restaurant can be opened comparatively at a slightly lower price_range, aiming to achieve a better rating by optimizing additional factors such as table_booking, online_delivery, is_delivering_now and switch_to_order_menu.
- In order to achieve the same, a calculated column named ratio was introduced, which represents the ratio of price_range and rating. This correlation ratio was analyzed, with the average values displayed.
- For further classification, country/cities were classified by value of avg_of_ratio higher than 0.85 and having very less no. of restaurants to further reduce the competition.

The dashboard must consist of Year-wise and country slicers.