

EXPLORATORY DATA ANALYSIS

REPORT FOR ZOMATO FOOD

CHAIN,INDIA.

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Client:

Zomato Restaurants food chain, India.

Objective of EDA:

To understand customer preferences, dining trends and competitive landscape food establishments in various regions of India and to propose an effective marketing campaign for the client restaurant.

Data Set:

Single data set (CSV file) with information on all the branches of Zomato foods as well as other national and international food establishments across various areas of India is provided with

2,11,944 rows and 26 columns. Data includes names of restaurants, type, locality, available cuisines, timings, price range and ratings etc.

Tool Utilized:

All the steps included in the analysis as elaborated below were performed using python (jupyter notebook 6.5.4) in Anaconda Navigator.

Step 1: Data Cleaning and Preparation:

Data was checked for any duplicates, missing values and other inconsistencies like data types, mislabeled categories. 5 out of 26 columns had missing values.

Missing values were dealt according to their relative significance for an unbiased and accurate data analysis. Missing values for zip code were the largest, however given its little significance it was decided to proceed without this attribute and drop the column altogether.

For cuisines, given their impact on analysis, rows with missing values were dropped to avoid any bias. Row's with missing values in address were also dropped. Rows with missing values in timings were filled with "not provided". Missing values in open table support column were filled with "unknown".

Data Type Inconsistency:

Data was largely consistent and there was no inconsistency found regarding data type in each column.

Data Optimization:

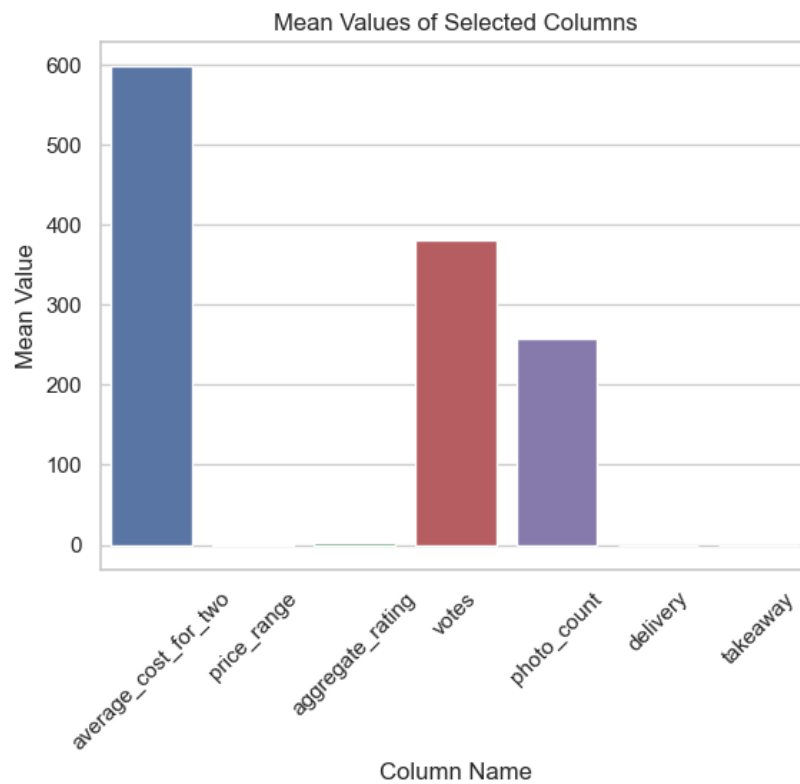
Data was further optimized by standardizing labels, removing trail spaces and maintaining a lower-case format throughout the data. Optimized data set consisted of 210545 rows and 25 columns.

Step 2: Exploratory data Analysis:

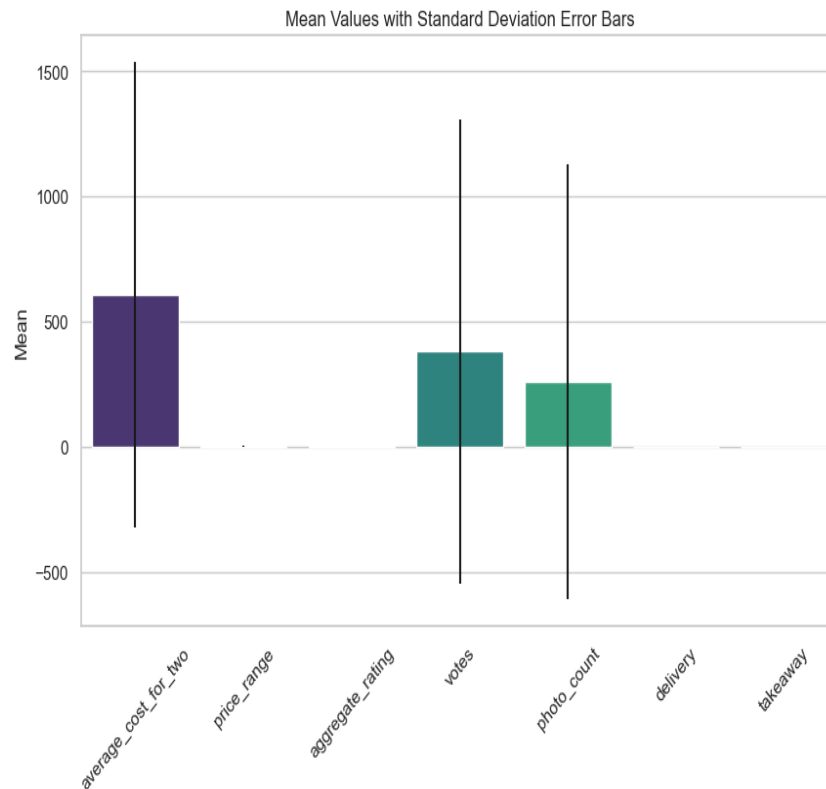
EDA was performed on the prepared data set in following order:

DESCRIPTIVE ANALYSIS:

Mean, Median, Mode and standard deviation was calculated for columns of interest.

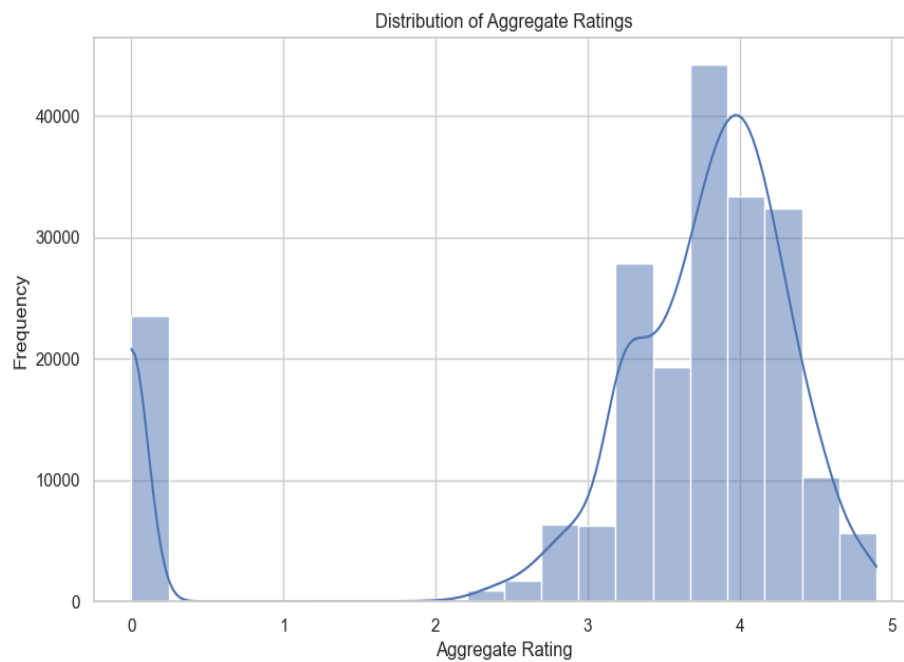


The average cost for two diners stood out as the most significant expenditure among the analysed metrics, indicative of a dataset that spans a wide economic range. Customer interaction, as inferred from average votes and photo uploads, suggests a moderate level of engagement across the platform. Meanwhile, delivery and takeaway services appear to be least common amenities provided by the restaurants.

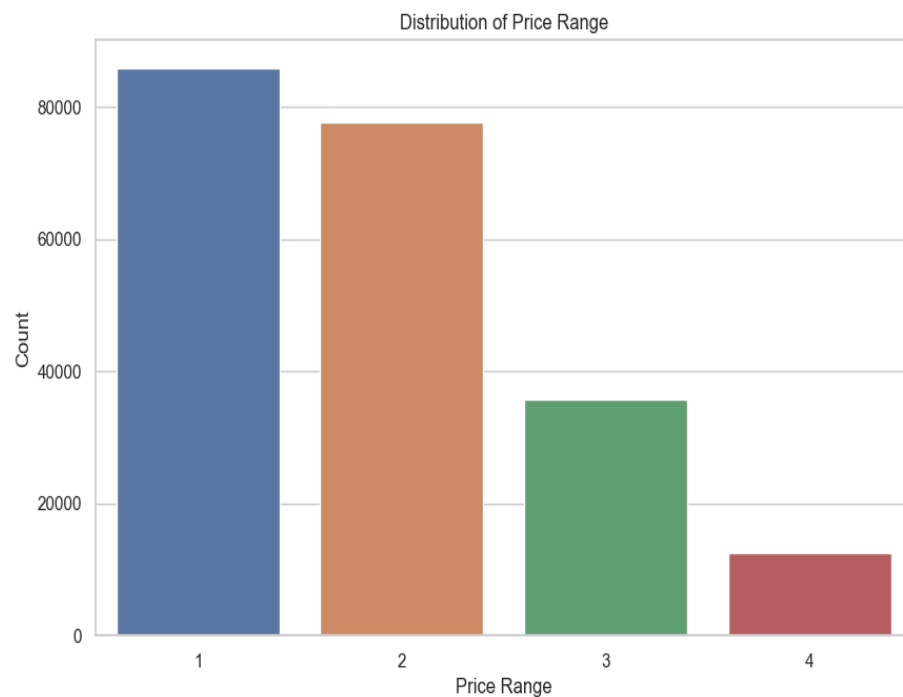


The significant standard deviation observed in the average cost for two and the number of votes per restaurant suggests diverse customer experiences and spending. This diversity reflects a wide range of dining options and varying degrees of popularity among establishments. The smaller standard deviation in aggregate ratings suggests that despite this diversity, customer satisfaction ratings tend to be more consistent.

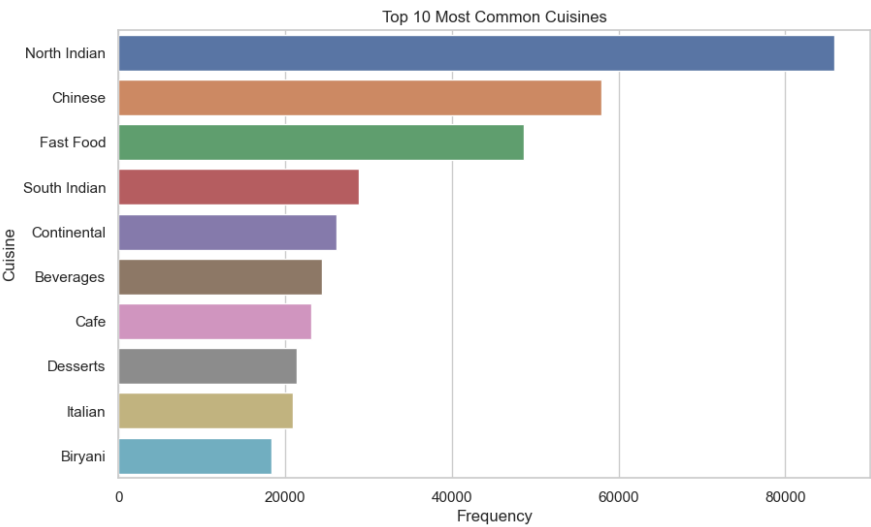
DISTRIBUTION ANALYSIS:



As seen in the above visual, distribution for ratings is skewed with peaks at the lowest and highest ratings indicating that customers tend to have extreme views about restaurants.

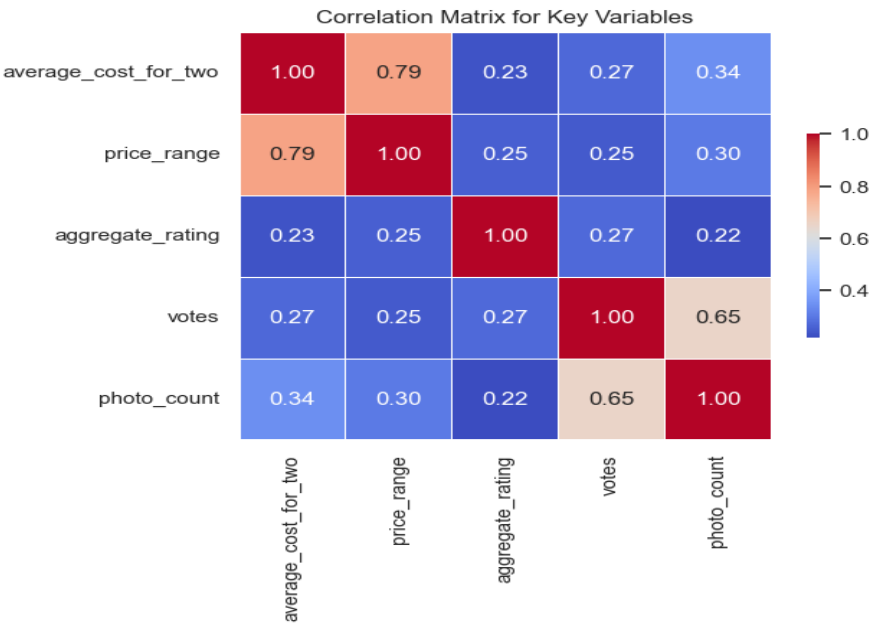


For price range the analysis shows a market favorable to affordable dining experiences.



In cuisine distribution we can notice North Indian cuisines dominating, indicating a strong market preference.

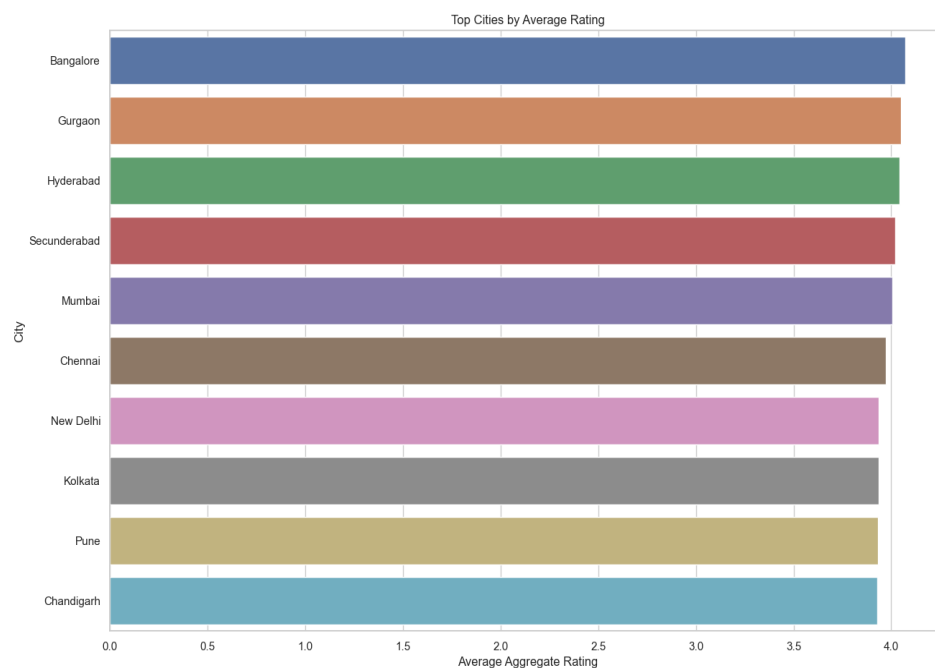
CORRELATION ANALYSIS:



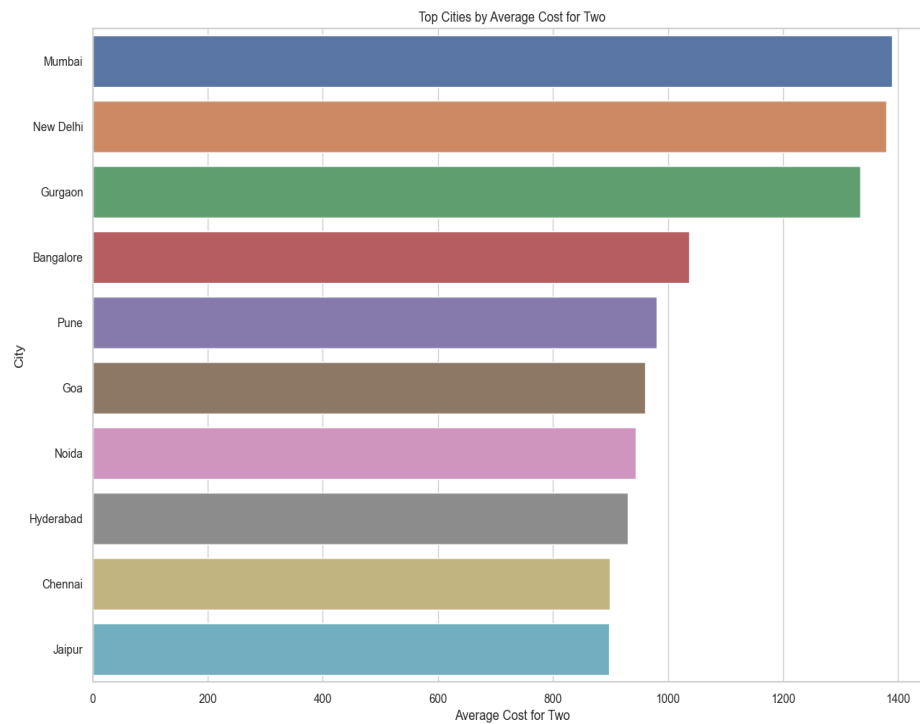
The displayed heat map shows correlation coefficients between certain selected variables. There is a strong positive correlation (0.79) between average cost for two and price range indicating that increase in one cause simultaneous increase in other. Other correlations do not seem very significant.

REGIONAL ANALYSIS:

Regional analysis was performed to compare restaurant trends and customer preferences across different regions of India.



Cities with the highest ratings, such as the top city on the chart, can be seen as premium dining destinations. For cities with lower ratings, marketing efforts could focus on improving and promoting service quality.

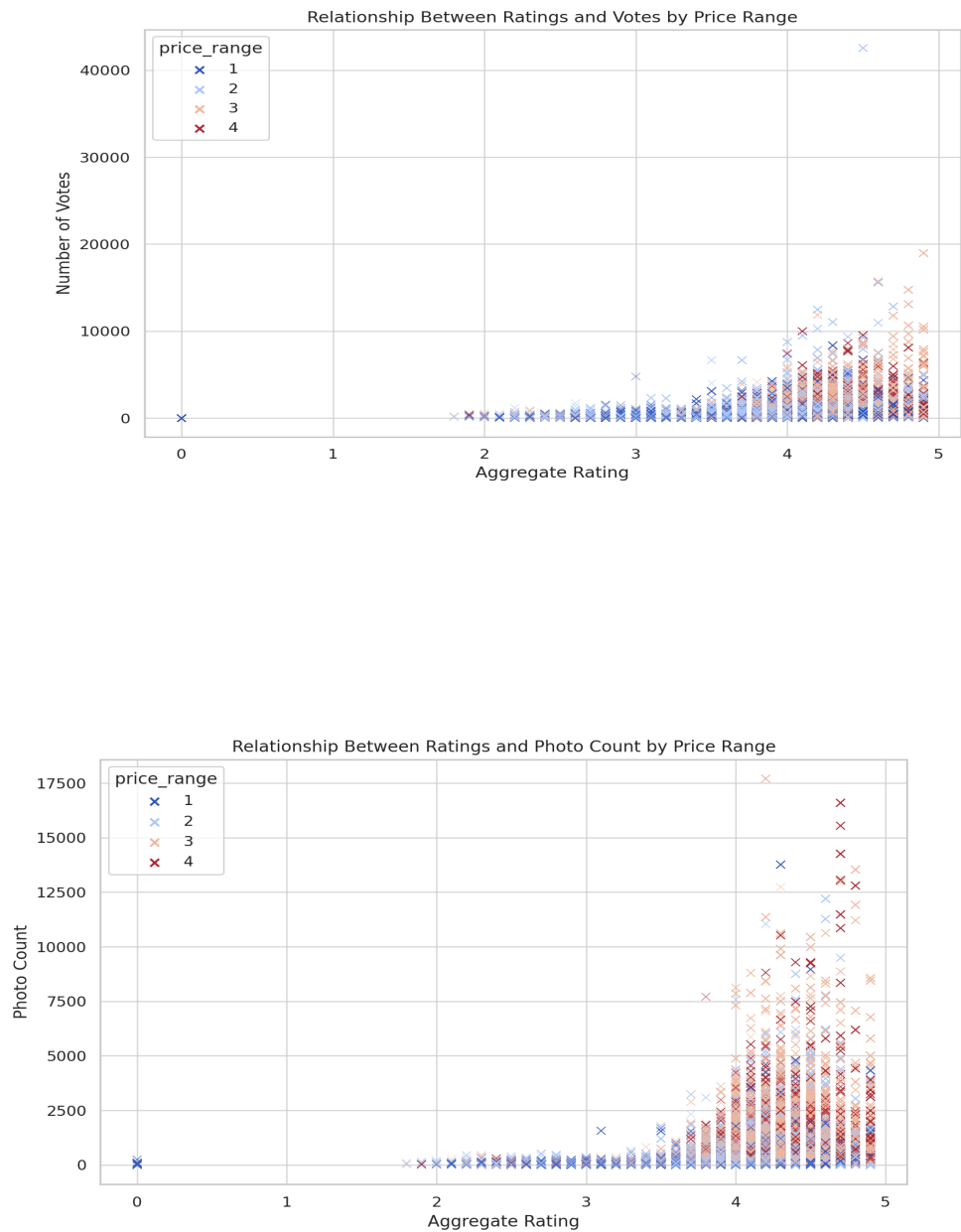


The city with the highest average cost for two indicates a market for luxury dining experiences, while cities with lower costs may be targeted with value-for-money dining campaigns.

Customer Preference Analysis:



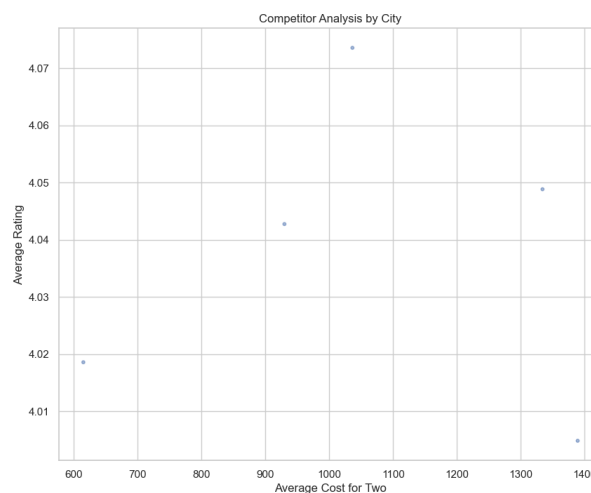
The analysis of cuisines and restaurant metrics across different cities provides valuable insights into market trends and customer preferences. Certain cities show a high concentration of specific cuisines, indicating potential market saturation. Other less-represented cuisines might represent opportunities for new restaurant ventures targeting underserved niches.



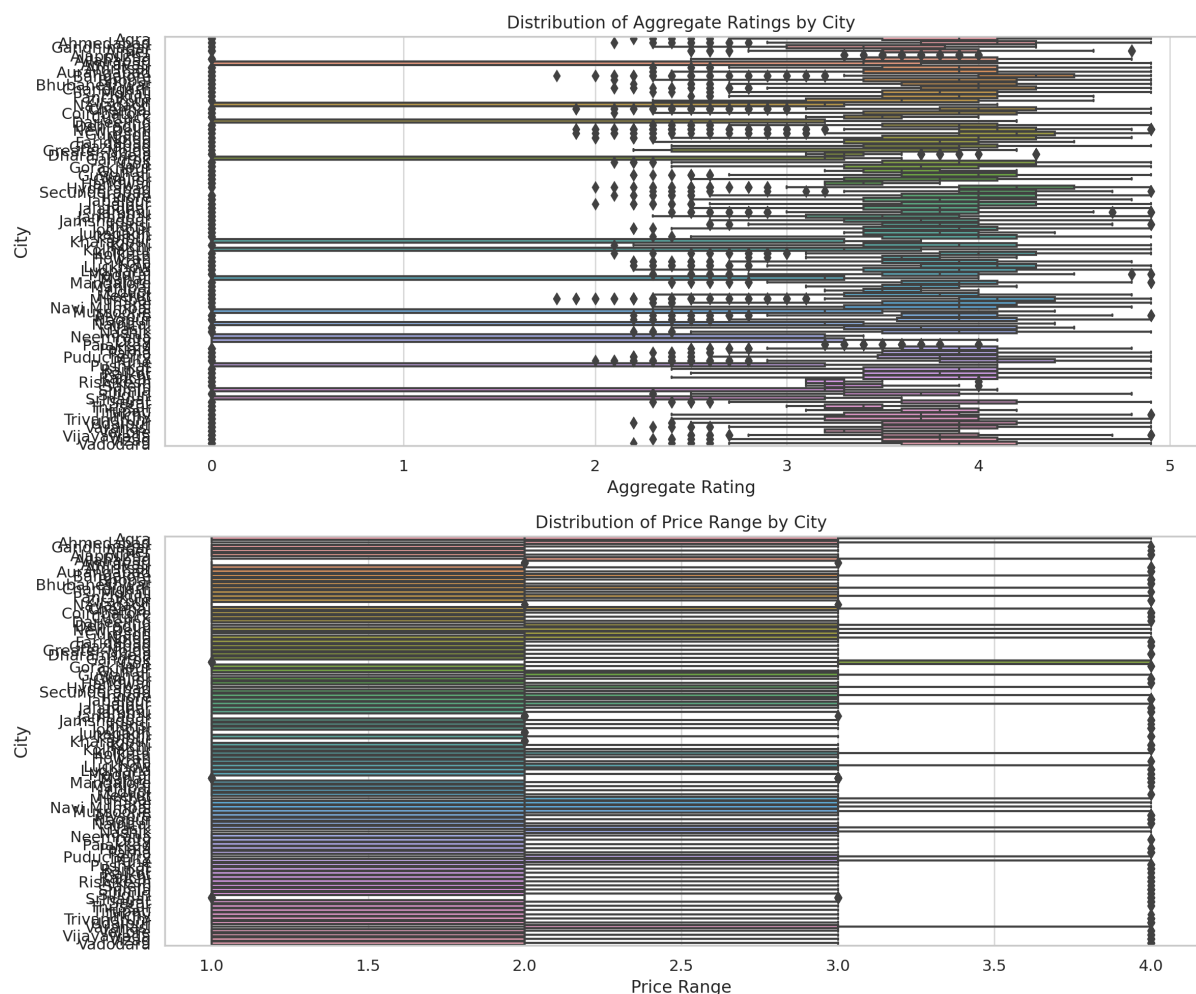
There's a noticeable trend that higher-rated restaurants receive more customer engagement, both in terms of votes and photos. This suggests that investing in quality (which influences ratings) can lead to increased popularity and customer loyalty. The moderate correlations

found between price range and both ratings and engagement metrics suggest that higher-priced restaurants are perceived positively, likely due to quality or exclusive offerings. However, it also highlights the importance of matching price strategy with the target market's expectations and economic conditions. These findings could guide strategic decisions for restaurant chains looking to expand or improve their market position by adapting to regional preferences and optimizing their pricing strategies.

Competitive Analysis:



The scatter plot revealed that competitor restaurants are clustered with a narrow range of high ratings, suggesting that top competitors are all highly rated and they deliver consistent quality. There is a visible spread along the average cost for two but much less variance in terms of average rating, which implies that while there is a variety of pricing strategies, the quality perceived by ratings is less variable at the top end. There are a few outliers with a significantly higher 'Average cost of two' which could represent high-end dining establishments in more expensive localities. Information on aggregate rating, price range, and highlights was used to analyse the strengths and weaknesses of competitor restaurants.



Cities with wider interquartile ranges (the middle 50% of ratings) have a more varied quality of restaurants. Cities where the median (the line in the box) is higher generally indicate a higher average customer satisfaction.

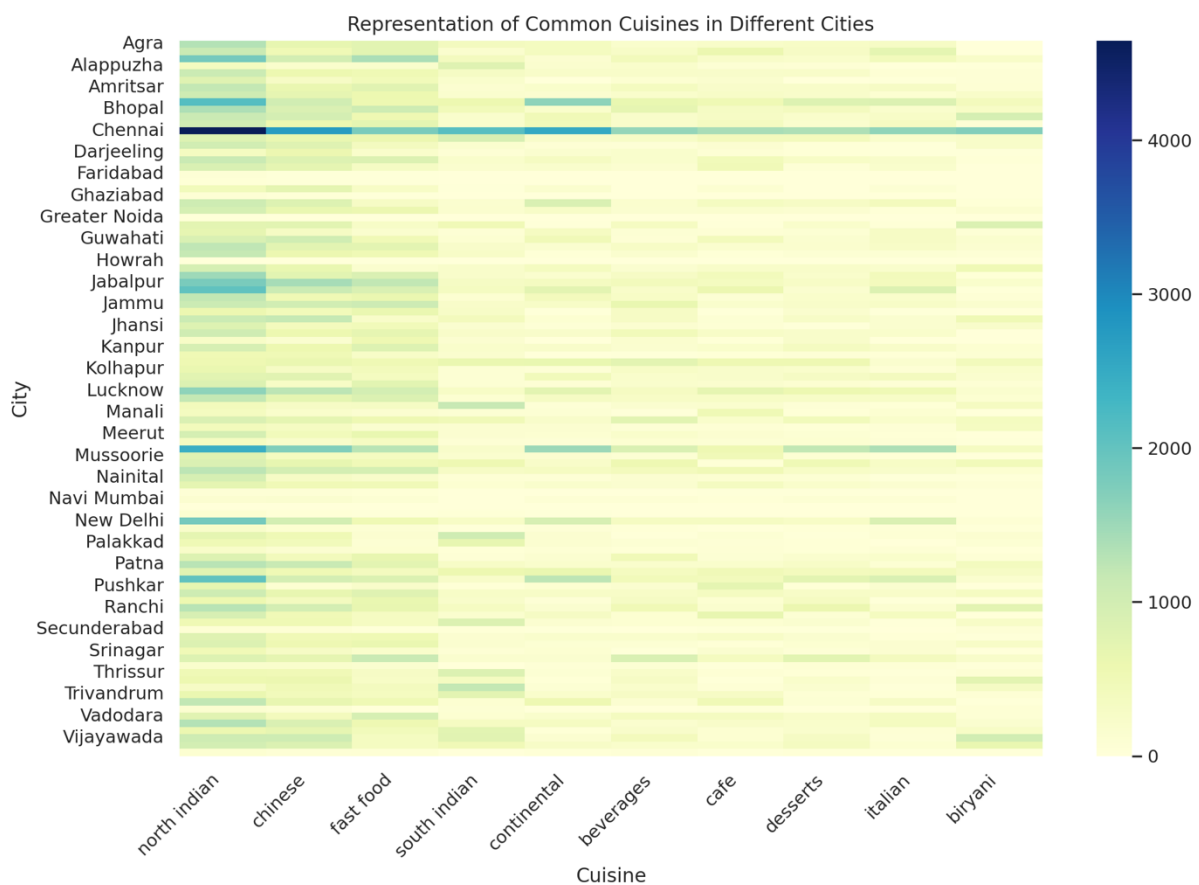
The price range plot helps us understand the affordability of restaurants in different cities. A higher median in the price range indicates a city with generally more upscale dining options.

Restaurants in cities or localities with higher average ratings could be seen as strong performers. Consistently high ratings across a restaurant chain or within a locality can signify effective management, high-quality food, and good customer service. Restaurants offering a variety of popular cuisines or specializing in cuisines that are rare but well-loved in their locality might have a competitive advantage. Restaurants that offer more amenities or unique features (as indicated in the 'highlights' column) might appeal more to customers looking for specific dining experiences. Restaurants with a lower price range in expensive cities or ones that offer value for money are likely to be perceived positively by a broader customer base.

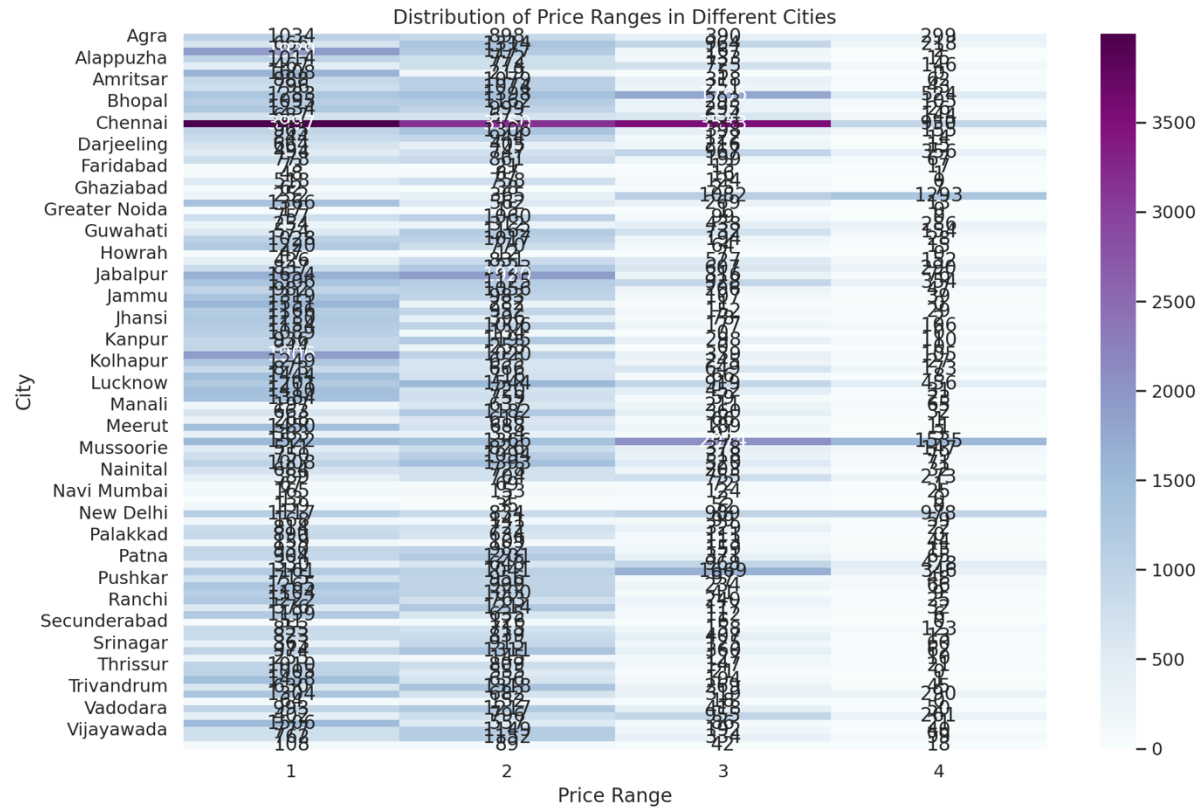
Restaurants with consistently low ratings need to investigate and address the underlying issues, whether they are related to service, food quality, or other operational aspects. Restaurants that offer only a few types of dishes or cuisines might struggle in diverse and competitive markets unless they are marketed as specialty/niche dining spots. Restaurants missing common highlights such as 'Credit Card Payments', 'Parking', or 'Delivery Service' might lose to competitors who offer these facilities. Restaurants in economically sensitive areas that maintain a high price range might experience lower patronage compared to those offering more reasonable prices.

Market Gap Analysis:

To identify potential gaps in the market that the client chain can capitalize on data was analysed to find underrepresented cuisines in specific cities or localities and price ranges that are less common but potentially in demand.



Based on the analysis of data, there are notable opportunities for capitalizing on market gaps. Several cities exhibit a deficiency in offering popular cuisines, such as Mediterranean or Japanese. Offering these underrepresented cuisines could meet unsatisfied demand and attract a niche customer base looking for variety.



The analysis of price ranges across cities reveals gaps in both the budget and premium segments of the market. Some cities show a limited presence of either budget-friendly eateries or upscale dining experiences. Meeting these unmet price points can cater to underserved segments, enhancing customer choice and satisfaction.

STEP 3: MARKETING CAMPAIGN PROPOSAL

Based on the exploratory data analysis (EDA) conducted on the Zomato food chain dataset, a strategic marketing campaign can be designed to enhance customer engagement, target different regions effectively, and differentiate Zomato from its competitors. Here are some proposed strategies:

1. Regional Targeting and Segmentation:

Tiered City Approach:

Different strategies for metro cities (like Mumbai, Delhi) vs. tier-2 cities (like Pune, Jaipur). Metro cities could focus on premium and diverse dining experiences, while tier-2 cities might have campaigns focused on value-for-money and budget-friendly options.

Local Cuisine Promotion:

Promote local cuisines heavily in regions where they are popular, based on regional analysis showing preferences. For cities with high concentration of specific cuisines, introduce variety by promoting less-represented cuisines to tap into new customer segments.

Underrepresented Markets:

Target cities identified with gaps in certain cuisines or dining experiences. Launch new Zomato-exclusive restaurants or partner with existing ones that can offer Mediterranean, Japanese, or fine dining experiences where these are lacking.

2. Customer Engagement Strategies:

Loyalty Programs:

Implement a tiered loyalty program rewarding frequent customers with discounts, priority reservations, and exclusive events. Use data to target high-engagement customers with personalized offers.

Engagement Through Quality:

Focus on maintaining high food quality and service which is correlated with higher ratings and customer engagement. Highlight top-rated restaurants in marketing to enhance the brand's reputation for quality.

Interactive Campaigns:

Run photo contests or cooking challenges on social media, incentivizing customers to post about their experiences at Zomato-listed restaurants, leveraging user-generated content to increase visibility.

3. Differentiation from Competitors:

Unique Selling Propositions (USPs): Highlight unique features of restaurants, such as 'pet-friendly', 'live music', or exclusive cuisines, that differentiate them from nearby competitors.

Value Propositions: In economically sensitive areas, promote restaurants that offer excellent value for money, contrasting with high-end competitors that may not fit everyone's budget.

Technology Integration: Launch Zomato app with features like AR menus, more personalized recommendations, and streamlined ordering processes to improve the user experience, distinguishing it from competitors.

4. Promotional Tactics

Discounts and Offers: Introduce time-bound discounts during off-peak hours or days. Provide location-based offers to attract more foot traffic to certain areas or restaurants.

Special Events: Organize food festivals or culinary nights collaborating with local food influencers and chefs to draw attention and provide an experiential dining experience.

Collaborations and Sponsorships: Partner with local events, concerts, or cultural festivals, offering Zomato as the official food service provider, to enhance brand visibility and reach.

5. Using Data Insights for Continuous Improvement:

Feedback System:

Leverage data from reviews and ratings to continuously improve the dining experience, menu offerings, and customer service. Use this feedback loop in marketing to show responsiveness to customer needs.

Market Monitoring:

Continuously analyse new data to keep track of changing customer preferences, regional dining trends, and competitive landscape adjustments, enabling agile marketing strategies.