

Restaurant Cuisines Analysis

PROJECT OVERVIEW:

The "Restaurant Cuisines Analysis" project aimed to explore and analyse various aspects of restaurant data, focusing on identifying patterns, trends, and insights related to cuisines, ratings, pricing, and service availability. The analysis utilised a combination of data processing, statistical techniques, machine learning, and visualisation tools to derive meaningful insights that could inform business decisions and customer understanding.

TOOLS AND TECHNOLOGIES USED:

- Pandas: Data manipulation, cleaning, and preprocessing.
- Numpy: Numerical operations and efficient handling of arrays.
- Matplotlib & Seaborn: Data visualisation, including histograms, bar charts, scatter plots, and heatmaps.
- Sklearn (Scikit-Learn): Machine learning, including decision trees, logistic regression, and clustering.
- Folium: Geospatial visualisation for plotting restaurant locations on interactive maps.

KEY ANALYSES AND TECHNIQUES:

1. Top Cuisines Analysis:

- Objective: Identify the top three most common cuisines and calculate the percentage of restaurants serving these cuisines.
- Approach: Used Pandas for frequency analysis and visualisation tools to display the distribution.
- Result: The top three cuisines were identified, with their respective percentages visualised using bar charts.

2. City Analysis:

- Objective: Determine the city with the highest number of restaurants and calculate the average rating for restaurants in each city.
- Approach: Used Pandas to aggregate data and Matplotlib/Seaborn for visualising citywise distributions.
- Result: The city with the most restaurants and the highest average rating was identified, providing insights into regional preferences.

3. Price Range Distribution:

- Objective: Visualise the distribution of price ranges and calculate the percentage of restaurants in each category.
- Approach: Created histograms using Matplotlib and Seaborn, and calculated percentages using Pandas.
- Result: A clear distribution of price ranges was visualised, helping to understand the pricing strategies of restaurants.

4. Online Delivery Analysis:

- Objective: Determine the percentage of restaurants offering online delivery and compare their average ratings with those that don't.

- Approach: Logistic regression was used to analyse the relationship, and bar charts were created to compare ratings.
- Result: The percentage of restaurants offering online delivery was determined, and their ratings were compared, providing insights into customer preferences.

5. Restaurant Ratings Analysis:

- Objective: Analyse the distribution of aggregate ratings and identify the most common rating range.
- Approach: Decision trees and clustering techniques were applied using Sklearn, and the results were visualised with Seaborn.
- Result: The most common rating range was identified, along with an analysis of the average number of votes received by restaurants.

6. Geographic Analysis:

- Objective: Plot the locations of restaurants on a map and identify any patterns or clusters.
- Approach: Used Folium for geospatial visualisation, plotting longitude and latitude coordinates.
- Result: Interactive maps were created, revealing clusters of restaurants in specific areas, which could inform location based strategies.

7. Restaurant Chains and Reviews Analysis:

- Objective: Identify restaurant chains, analyse their ratings, and perform text analysis on reviews to extract common keywords.
- Approach: Clustering was used to identify chains, and Natural Language Processing (NLP) techniques were applied to review text.
- Result: Key restaurant chains were identified and analysed, and common themes in reviews were extracted, providing insights into customer satisfaction.

8. Votes Analysis:

- Objective: Identify the correlation between the number of votes a restaurant receives and its rating.
- Approach: Correlation analysis was conducted using Pandas and visualised with scatter plots in Matplotlib.
- Result: A clear correlation was identified, highlighting the impact of customer engagement on restaurant ratings.

CONCLUSION:

The "Restaurant Cuisines Analysis" project provided a comprehensive analysis of the dataset, uncovering key insights into restaurant performance, customer preferences, and service offerings. The use of machine learning and visualisation techniques enabled a deeper understanding of the data, which could be leveraged to inform business strategies in the restaurant industry.