

# Food Hub Data Analysis

## 1. Introduction

The Food Hub Data Analysis project aims to analyze food order data from a food aggregator company. As a Data Scientist, our goal is to provide actionable insights that enhance customer experience and improve business operations. We address key questions related to orders, customer behavior, restaurant performance, demand patterns, operational efficiency, and customer insights.

## 2. Data Description

### 2.1 Dataset Overview

- The dataset contains information about food orders.
- Key features include order ID, customer ID, restaurant name, cuisine type, cost, day of the week, rating, food preparation time, and delivery time.

### 2.2 Data Dictionary

- **order\_id**: Unique order identifier
- **customer\_id**: Customer ID
- **restaurant\_name**: Name of the restaurant
- **cuisine\_type**: Cuisine ordered
- **cost**: Cost of the order
- **day\_of\_the\_week**: Weekday or weekend
- **rating**: Customer rating (out of 5)
- **food\_preparation\_time**: Time taken by the restaurant to prepare food
- **delivery\_time**: Time taken for delivery

# 3. Data Exploration and Cleaning

## 3.1 Basic Operations

- Displaying Top and Last Rows

We begin by examining the first and last few rows of our dataset to get a sense of the data structure. This helps us understand the feature names, data types, and any potential issues.

- Checking Dataset Shape and Data Types

Understanding the dataset's dimensions (number of rows and columns) is crucial. Additionally, we verify the data types for each feature (e.g., numeric, categorical, datetime).

- Calculating Statistical Summary

A statistical summary provides essential insights into the central tendency, spread, and distribution of numerical features. We calculate metrics such as mean, median, standard deviation, and quartiles.

- Handling Null Values and Duplicates

Identifying missing values (nulls) and duplicate rows is essential for data quality. We assess the presence of nulls in each column and check for duplicated records.

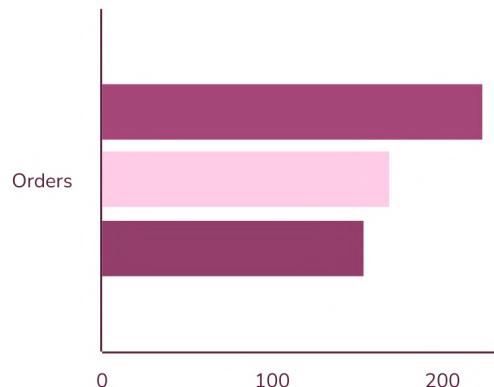
## 3.2 Anomalies and Outliers

We've also investigated anomalies and outliers in specific columns:

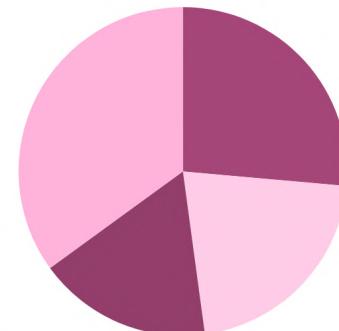
- **Delivery Time:** We detected non-numeric values and outliers.
- **Food Preparation Time:** Similar checks were performed.
- **Cost:** We looked for non-numeric values and outliers.
- **Rating:** We ensured that ratings fall within the valid range (1 to 5).

# Trends

## | Top Orders



## | Preferred Cuisines



## Popular Restaurants

Our customers' favorite restaurants are 'Burger Place', 'Pizza Time' and 'Noodle House', accounting for 55% of all orders.

## Flavorite Foods

Burgers, Pizza and Noodles are the crowd pleasers, ordered in 45% of all orders.

## | Weekday Delights

### Popular Weekdays

Friday and Saturday take the crown, with 65% of orders being placed on these days.



# 4. Order Analysis

## 4.1 Total Orders

- The total number of orders in the dataset is crucial for understanding the scale of the business. It provides insights into customer demand and workload.

## 4.2 Average Cost

- The average cost per order helps us gauge the typical spending by customers. It informs pricing strategies and revenue projections.

## 4.3 Unique Customers

- Identifying the number of unique customers who have placed orders allows us to assess customer acquisition and retention efforts.

## 4.4 Top Restaurant

- The restaurant that has received the highest number of orders is a key performance indicator. It highlights customer preferences and restaurant popularity.

# 5. Customer Behavior

## 5.1 Average Rating

- Understanding customer satisfaction is crucial. We calculate the average rating given by customers to assess overall service quality.

## 5.2 Rating Variation

- We analyze how ratings vary between weekdays and weekends. This insight helps identify any patterns related to service quality on different days.

## 5.3 Most Ordered Cuisine

- Identifying the most ordered cuisine type provides insights into customer preferences. It guides menu planning and marketing efforts.

## 5.4 Day-wise Distribution

- Analyzing the distribution of orders across different days of the week helps us understand peak demand periods and plan resources accordingly.

# 6. Restaurant Performance

## 6.1 Food Preparation Time

- The average food preparation time for each restaurant is a critical metric. It reflects kitchen efficiency and impacts customer satisfaction. Restaurants with shorter preparation times tend to provide faster service.

## 6.2 Fastest Restaurant

- Identifying the restaurant with the shortest average food preparation time allows us to recognize operational excellence. Customers appreciate timely service, and this metric influences repeat business.

## 6.3 Delivery Time Comparison

- Comparing the average delivery time across different restaurants helps us understand delivery efficiency. It highlights areas for improvement and informs logistics strategies.

## 6.4 Cost vs. Rating

- We investigate whether there is a correlation between the cost of an order and the rating given. Understanding this relationship guides pricing decisions and customer experience enhancements.

# 7. Demand Patterns

## 7.1 Cuisine Demand

- Understanding how demand for different cuisine types varies on weekdays versus weekends is essential. It helps restaurants optimize their offerings based on customer preferences during specific days.

## 7.2 Highest Order Cost

- Identifying the day of the week with the highest average order cost provides insights into customer spending behavior. Restaurants can tailor promotions or menu options accordingly.

## 7.3 Common Order Day

- Knowing the most common day for orders allows businesses to allocate resources efficiently. It impacts staffing, inventory management, and delivery logistics.

## 7.4 Rating by Cuisine

- Analyzing how the average rating varies by cuisine type helps identify which cuisines receive better customer feedback. This informs menu adjustments and marketing strategies.

# 8. Operational Efficiency

## 8.1 Average Delivery Time

- Understanding the average delivery time for all orders is crucial. It directly impacts customer satisfaction and operational effectiveness.

## 8.2 Slowest Restaurant

- Identifying the restaurant with the longest average delivery time allows us to address bottlenecks. Improving delivery efficiency enhances overall service quality.

## 8.3 Food Prep vs. Delivery

- We investigate the relationship between food preparation time and delivery time. Balancing these two aspects ensures timely and fresh deliveries.

## 8.4 Delivery Time and Ratings

Analyzing how delivery time impacts customer ratings helps us optimize delivery processes. Faster deliveries often lead to higher customer satisfaction.

# 9. Customer Insights

## 9.1 Repeat Order Rate

- Understanding the percentage of repeat customers (those who have placed more than one order) is essential. It reflects customer loyalty and the effectiveness of retention strategies.

## 9.2 High-Rated Orders

- Identifying the percentage of orders receiving a rating of 4 or higher helps gauge overall customer satisfaction. High ratings contribute to positive brand perception.

# 10. Conclusion

In this **Food Hub Data Analysis project**, we explored various aspects of the food order dataset. Here are the key findings and recommendations:

## **Order Insights:**

- The total number of orders indicates the scale of business operations.
- The average cost per order helps in pricing decisions.
- Unique customer count informs customer acquisition efforts.
- Recognize the restaurant with the highest order count for strategic partnerships.

## **Customer Behavior:**

- The average rating reflects overall customer satisfaction.
- Consider variations in ratings between weekdays and weekends.
- Focus on the most ordered cuisine type for menu optimization.
- Plan resources based on day-wise order distribution.

## **Restaurant Performance:**

- Optimize food preparation time for better customer experience.
- Acknowledge the fastest restaurant for operational excellence.
- Monitor delivery time across restaurants.
- Understand the relationship between cost and rating.

## **Demand Patterns:**

- Adapt cuisine offerings based on weekday vs. weekend demand.
- Utilize insights from the day with the highest average order cost.
- Allocate resources efficiently based on common order days.
- Enhance specific cuisines based on average ratings.

## **Operational Efficiency:**

- Improve overall delivery time for better customer satisfaction.
- Address inefficiencies in the slowest restaurant.
- Balance food preparation and delivery times.
- Optimize delivery processes to impact ratings positively.

## **Customer Insights:**

- Foster repeat business by retaining loyal customers.
- Aim for high ratings (4 or higher) to build a positive brand image.

In summary, data-driven decisions can enhance Food Hub's customer experience, operational efficiency, and overall business success. Regular monitoring and adjustments based on these insights will drive continuous improvement.