# Restaurant Demand Insights

## FoodHub Case Study - Pam Lozano

09/2023

# Objective

Analyzing FoodHub App Data for Enhanced Customer Experience

**Key Focus Areas:**

1.  Impactful Variables: Explore factors influencing delivery times and customer experience.
2.  Restaurant Diversity: Understand the demand for various restaurant types.
3.  Optimizing Experience: Identify opportunities to enhance overall customer satisfaction.

# Contents / Agenda

- Business Problem Overview

- Solution Approach

- Data Overview

- EDA - Univariate Analysis

- EDA - Multivariate Analysis

- Executive Summary

  - Conclusions

  - Recommendations

- Further Analysis

# Data Information

The data contains the details from customer orders including customer preferences, restaurant attributes, and cuisine choices, all serve as valuable inputs for improving the app experience.

| Variable | Description |
|---|---|
| order_id | Unique ID of the order |
| customer_id | ID of the customer who ordered the food |
| restaurant_name | Name of the restaurant |
| cuisine_type: | Cuisine ordered by the customer |
| cost_of_the_order | Cost of the order |
| day_of_the_week | Indicates whether the order is placed on a weekday or weekend (The weekday is from Monday to Friday and the weekend is Saturday and Sunday) |
| rating | Rating given by the customer out of 5 |
| food_preparation_time | Time (in minutes) taken by the restaurant to prepare the food. This is calculated by taking the difference between the timestamps of the restaurant's order confirmation and the delivery person's pick-up confirmation. |
| delivery_time | Time (in minutes) taken by the delivery person to deliver the food package. This is calculated by taking the difference between the timestamps of the delivery person's pick-up confirmation and drop-off information |

# Business Problem Overview

The business problem at hand involves the analysis that focuses on understanding the time it takes for food to be prepared once ordered through the FoodHub app, with a dataset of 1898 entries across 9 columns.

The goal is to gain insights into customer behavior, restaurant performance, and cuisine preferences to enhance the overall customer experience.

# Solution Approach

- **Preparation Time Analysis:** Investigate preparation time statistics (minimum, average, maximum) to understand efficiency and identify trends.

- **Customer and Restaurant Insights:** Analyze customer behavior, popular restaurants, and cuisines to highlight top restaurants.

- **Cuisine Analysis:** Examine cuisine distribution, identify popular and less popular cuisines, and analyze outliers.

- **Order Cost Analysis:** Investigate average orders costs, high-cost orders, and customer spending patterns.

- **Delivery Time Analysis:** Analyze delivery time patterns, differences between weekdays and weekends, and identify trends.

- **Promotional Strategy:** Identify restaurants eligible for a promotions and analyze their impact on customer engagement.

- **Customer Voucher Analysis:** Understand the impact of a 20% voucher on top customers and loyalty.

- **Outliers and Correlations:** Analyze outliers and correlations between variables to identify factors affecting customer experience.

- **Weekday vs Weekend Analysis:** Compare delivery times on weekdays and weekends to assess service efficiency.

# Data Overview

- There are 1898 rows and 9 columns.
- The datatypes of the different columns are float, integer, and object.
- There are no missing values in the dataset.
- The minimum time it takes for food to be prepared is 20 minutes. The average time it takes for food to be prepared is 27 minutes. The max amount of time it takes for food to be prepared is 35 minutes.
- There are 0 orders that are not rated.

# Univariate Analysis

- There are 1898 different orders.

- There are 1200 different customers.

- There are 78 different restaurants.

- There are 14 different types of cuisines. The top 3 cuisines are American, Japanese, and Italian. The least popular cuisines are Korean, Spanish, and Vietnamese.

- The average cost of the order is about $14. The cost range is between $4 and $36.

- The weekends are the most popular days of the week that food is ordered. More than double is ordered on the weekends than the weekdays.

- Most ratings were not given.

- The average food preparation time is about 27 minutes.

- The average delivery time is 25 minutes.
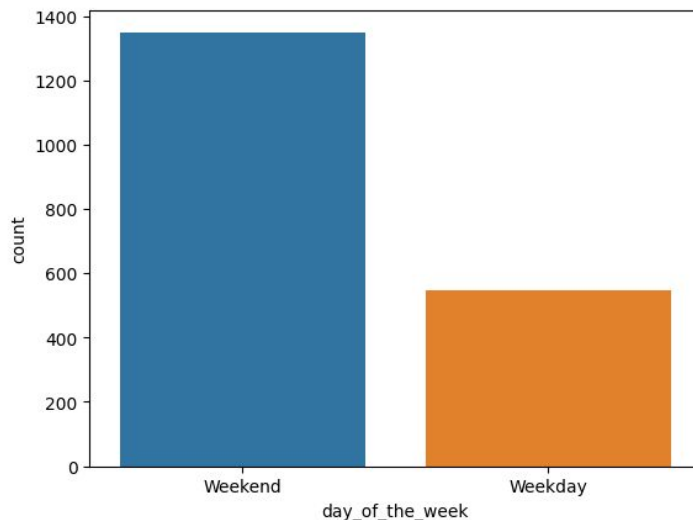
# Univariate Analysis - Cuisine Type
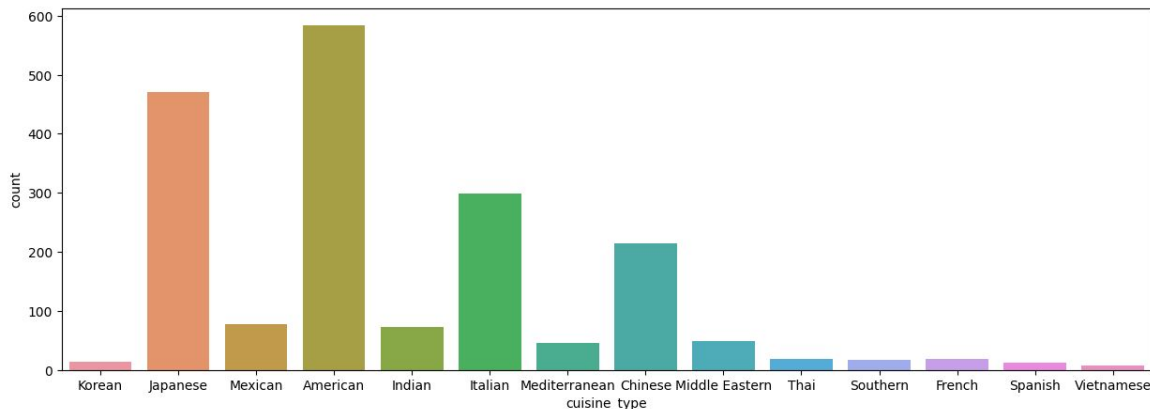
- There are 14 different types of cuisines. The top 3 cuisines are American, Japanese, and Italian.
- The least popular cuisines are Korean, Spanish, and Vietnamese.
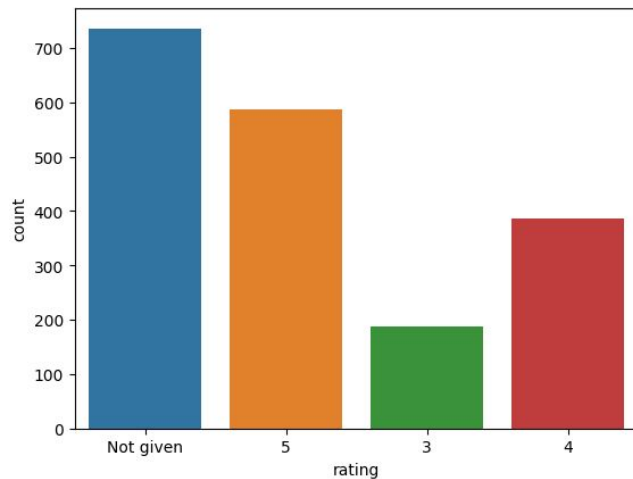
# Univariate Analysis - Cost of Order
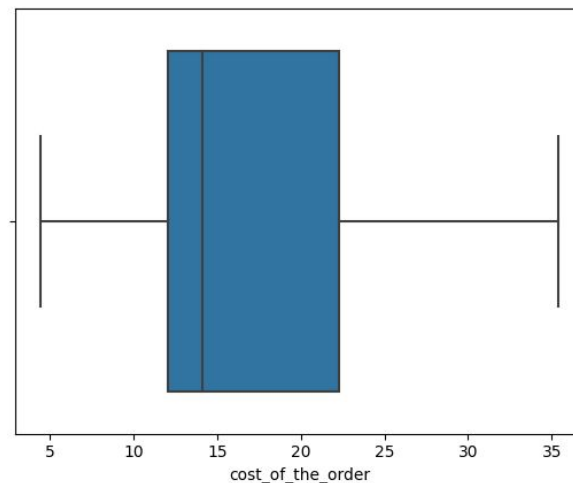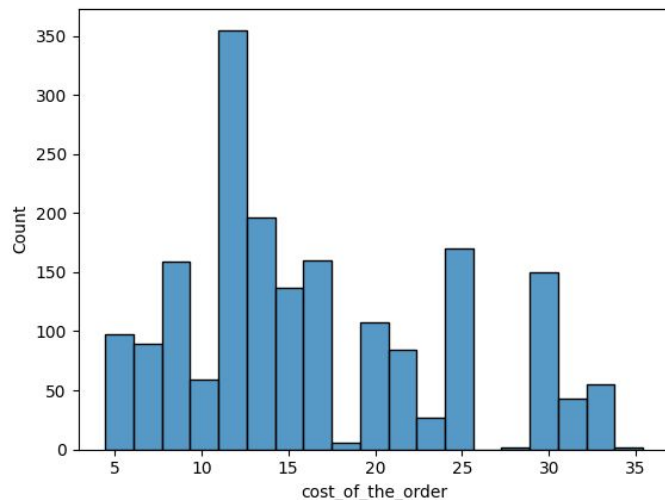


- The average cost of the order is about $14. The cost range is between $4 and $36.
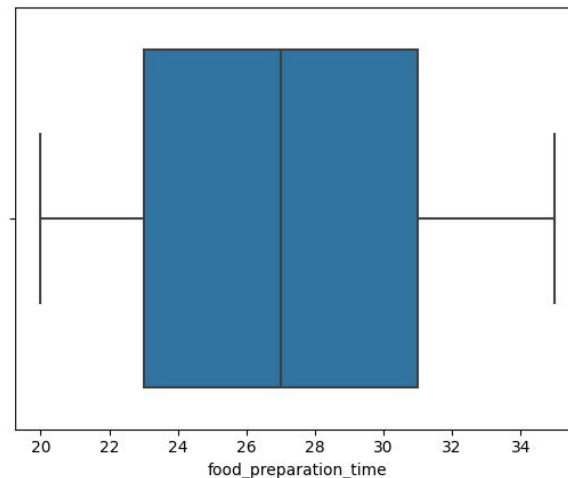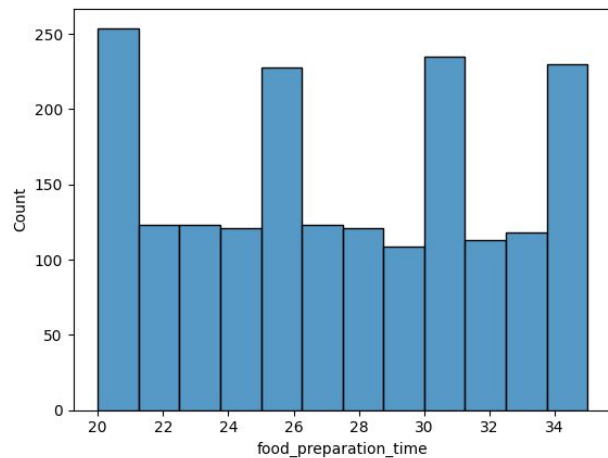
# Univariate Analysis - Day of the Week



- The weekends are the most popular days of the week that food is ordered.
- More than double is ordered on the weekends than the weekdays.
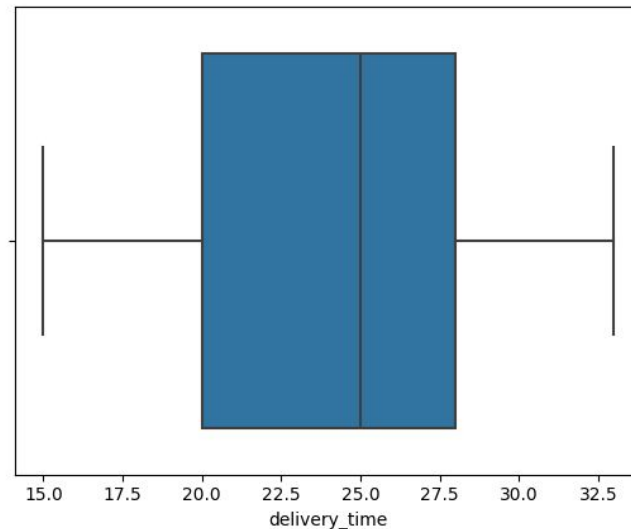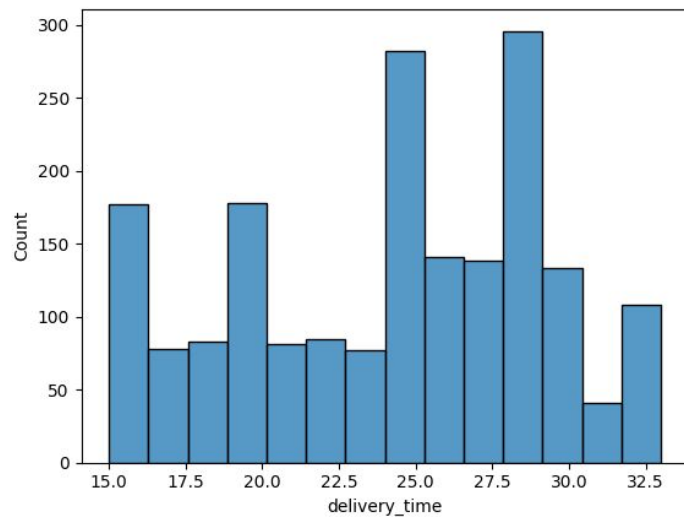
# Univariate Analysis - Rating



- Most ratings were not given.

# Univariate Analysis - Food Preparation Time



- The average food preparation time is about 27 minutes.

# Univariate Analysis - Delivery Time

- The average delivery time is 25 minutes.

# Univariate Analysis cont'd

- The top 5 restaurants in regards to orders received are Shake Shack, The Meatball Shop, Blue Ribbon Sushi, Blue Ribbon Fried Chicken, and Parm
- American is the most popular cuisine on weekends.
- The number of total orders that cost above 20 dollars is 555. Percentage of orders above 20 dollars is 29.24%
- The mean delivery time is 24.16 minutes.
- The 3 top frequent customers who will receive a 20% voucher are the customers with ids 52832, 47440, and 83287 respectively.
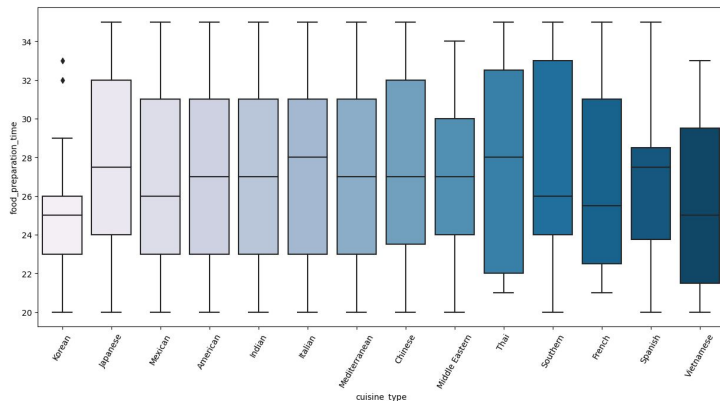
# Multivariate Analysis - Cuisine vs Cost of the Order
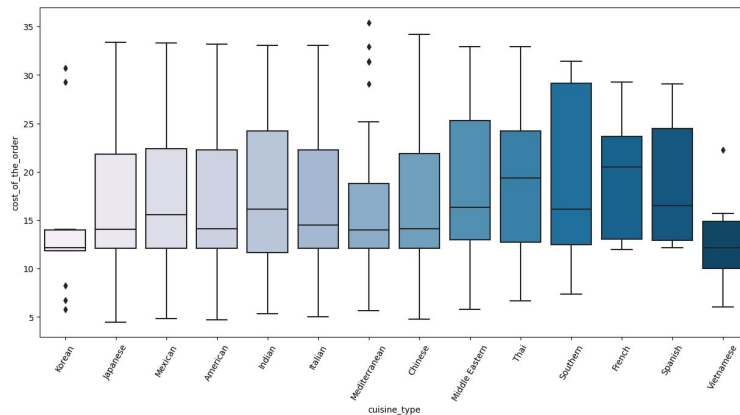


- Korean, Mediterranean, and Vietnamese cuisines all have outliers.

- Distribution looks almost evenly distributed.

- The minimum cost of most cuisines is $4.

- The maximum cost of most cuisines is around $34.

- The median cost of the order starts around $13.

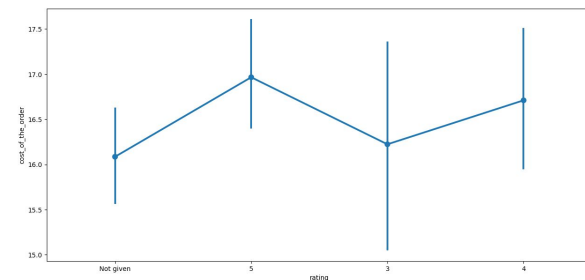# Multivariate Analysis - Cuisine vs Food Preparation Time



- Korean has some outliers.

- The minimum amount of time that most cuisines take to prepare is 20 minutes except for Thai and French cuisines.

- The median amount of time that most cuisines take to prepare is about 25 minutes.

- The maximum amount of time that most cuisines take to prepare is approximately 35 minutes.

# Multivariate Analysis - Day of the Week vs Delivery Time
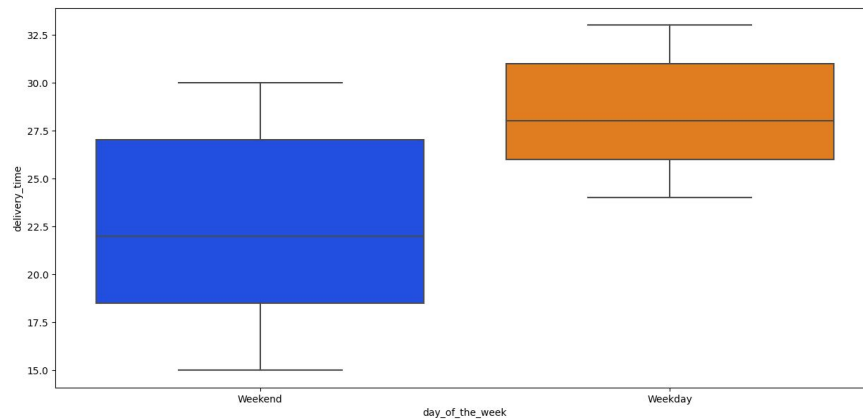


- The delivery time takes longer on the weekdays than the weekends.

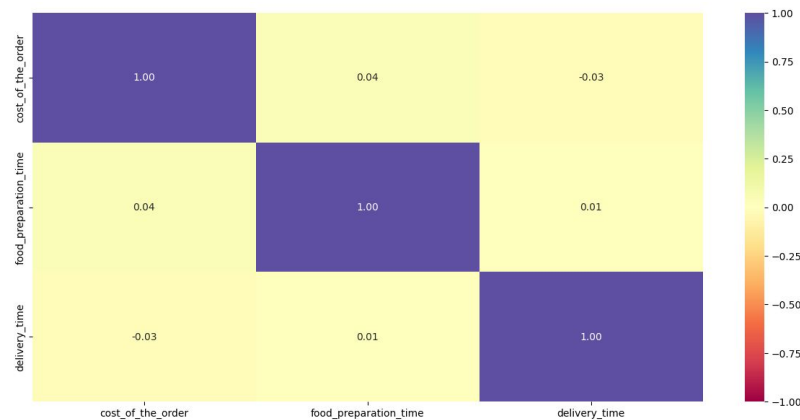# Multivariate Analysis - Rating vs Delivery Time, Food Preparation Time, and Cost of Order
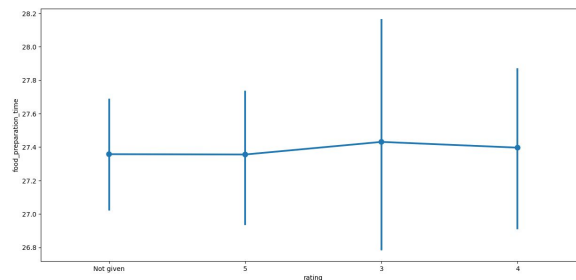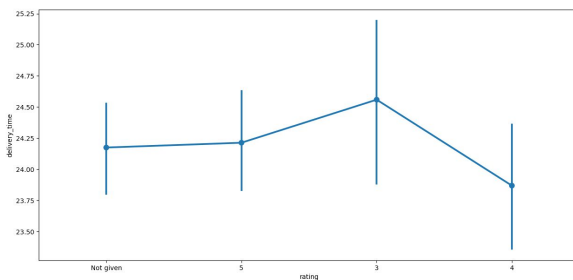


- A trend does not appear between the rating, delivery time, food preparation time, and cost of the order.

# Multivariate Analysis - Correlation Among Variables



- There is not a high correlation between cuisine type, cost of the order, and food preparation time.

# Multivariate Analysis cont'd

- The restaurants that qualify for the promotional offer are Shake Shack, The Meatball Shop, Blue Ribbon Sushi, Blue Ribbon Fried Chicken, and Red Farm Broadway.

- The Shake Shack has the most ratings. The Red Farm Broadway has the least amount of ratings.

- The net revenue generated by the company is $6,166.30

- There are 0 orders that have a total delivery time over 60 minutes.

- The percentage of orders with total delivery time over 60 minutes is 0%

- The mean delivery time on weekdays is 28 minutes and on weekends is 22 minutes.

# Executive Summary - Conclusions

- The average food preparation time is around 27 minutes, with a range of 20 -35 minutes.
- Weekends see significantly higher order volumes compared to weekdays.
- American cuisine is the most popular on weekends, while Korean, Spanish, and Vietnamese are less favored.
- There's a notable percentage (29.24%) of orders with costs exceeding $20.
- The mean delivery time for the dataset is approximately 24.16 minutes.
- Top-rated customers receiving a 20% voucher include customers 52832, 47440, and 83287
- Revenue varies greatly across restaurants with Shake Shack leading and Five Guys Burgers and Fries having the lowest.
- The net revenue generated by the company amounts to $6,166.30
- None of the orders have a total delivery time exceeding 60 minutes.
- Mean delivery time is shorter on weekends (22 minutes) compare to weekdays (28 minutes).

# Executive Summary - Recommendations

- **Efficiently Manage Peak Times:** Since weekends have significantly higher order volumes, restaurants can optimize staffing and resources to handle the increased demand effectively.
- **Promote Popular Cuisines:** Given American cuisines popularity on weekends, restaurants could strategically promote this cuisine during these peak periods to attract more customers.
- **Offer deals for high-value orders:** Considering a significant proportion of orders exceed $20, restaurants can introduce special offers or promotions for orders above this threshold to further incentivize customer spending.
- **Focus on delivery time:** As the mean delivery time is around 24 minutes, restaurants should aim to maintain or improve delivery efficiency to meet customer expectations consistently.
- **Enhance Rating Collection:** Encouraging more customers to rate their orders can provide valuable feedback, enabling restaurants to identify areas for improvement and better understand customer preferences.
- **Optimize Revenue Generation:** Restaurants should closely analyze their revenue distribution and consider strategies to boost sales for lower-performing establishments while maintaining the strengths of higher-performing ones.
- **Maintain Quality on Weekdays:** To ensure consistent customer satisfaction, restaurants should work to minimize delivery time during weekdays, aiming for a level closer to the more efficient weekends.
- **Leverage Customer Segmentation:** Tailoring marketing efforts and promotions based on customer behavior, such as providing targeted offers to the top-rate customers, can help enhance customer loyalty and engagement.

# Further Analysis that can be done

- Customer Segmentation and Behavior: Perform a comprehensive customer segmentation analysis to identify distinct customer groups based on factors like order frequency, spending patterns, and cuisine preferences. This can provide insights into targeted marketing strategies and personalized promotions.

- Sentiment Analysis and Reviews: Dive deeper into customer reviews and ratings to perform sentiment analysis. Understand the sentiments behind positive and negative reviews to address pain point and improve overall customer experience.

- Delivery Time Optimization: Conduct a detailed analysis of delivery times based on various factors such as day of the week, time of day, and restaurant location. This can help optimize delivery processes and minimize delays, leading to better customer satisfaction.