

FoodHub Data Analysis for Business Growth

Project: Python Foundations: FoodHub

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AGENDA

- Executive Summary
- Business Problem Overview & Solution Approach
- Data Overview
- EDA - Univariate Analysis
- EDA - Multivariate Analysis
- Appendix

Executive Summary

Overall Conclusions

- Popular cuisines and restaurants tend to have higher customer retention.
- There is a difference in pattern for weekend vs weekday orders
- Preparation time and delivery time affect ratings in a significant manner.

Executive Summary

Recommendations

- Focus in on reducing delivery times for restaurants that are lower rated
- With weekends having more orders, we should focus marketing on weekends with popular cuisines
- Introduce loyalty rewards for frequent customers

Business Problem Overview

- Company needs to understand which restaurants and cuisines cause the most orders.
- Need to identify certain factors that affect ratings and the overall delivery performance.
- Overall, need to optimize operations, improve delivery efficiency, retain customers, and also increase profits.

Solution Approach

- Perform EDA (both Univariate and Multivariate) to find trends in service along with demand.
- Recognize cuisines and restaurants that are top-performing.
- Examine the relationship between ratings and delivery and preparation times.
- Provide recommendations for overall growth of the business

Data Overview

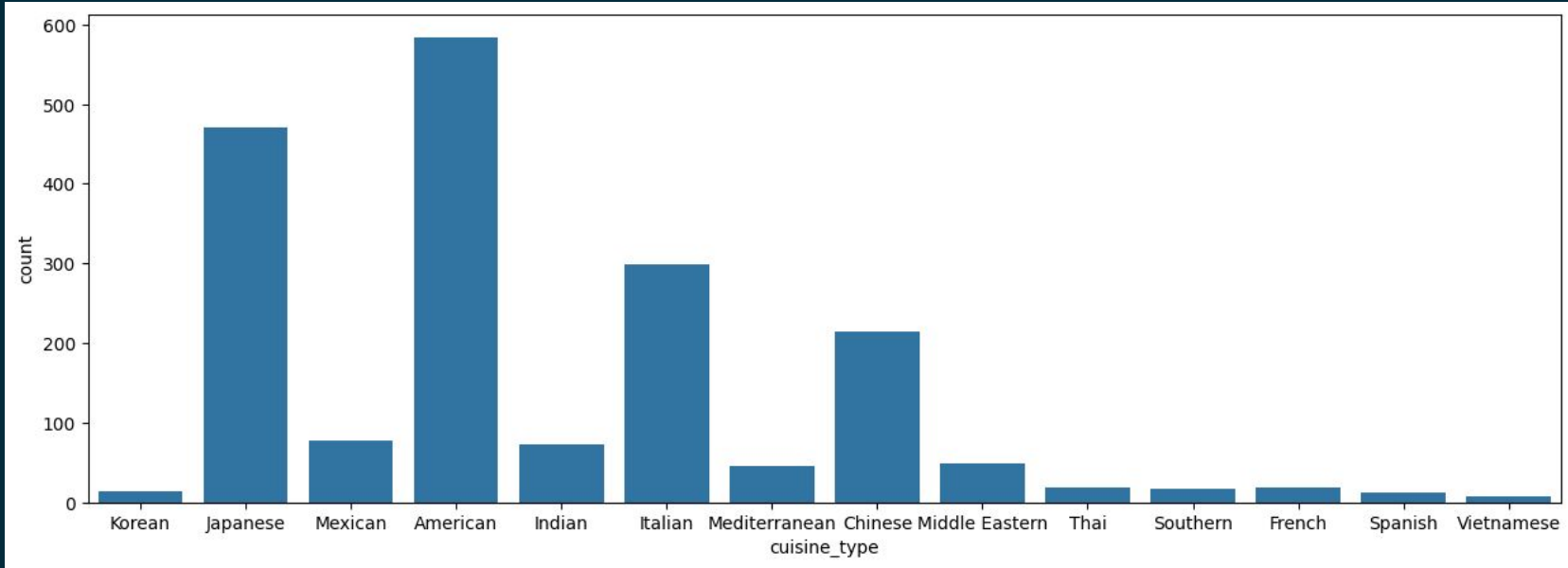
- There are 1898 rows and 9 columns.
- There are mixed data types, which includes both categorical and numerical variables.
- There are no missing values, not to be confused with “Not rated” in the rating column. (736 orders not rated)

Key Statistics in Food Prep Time:

- Min: 20 minutes
- Mean: 27 minutes
- Max: 35 minutes

EDA - Univariate Analysis

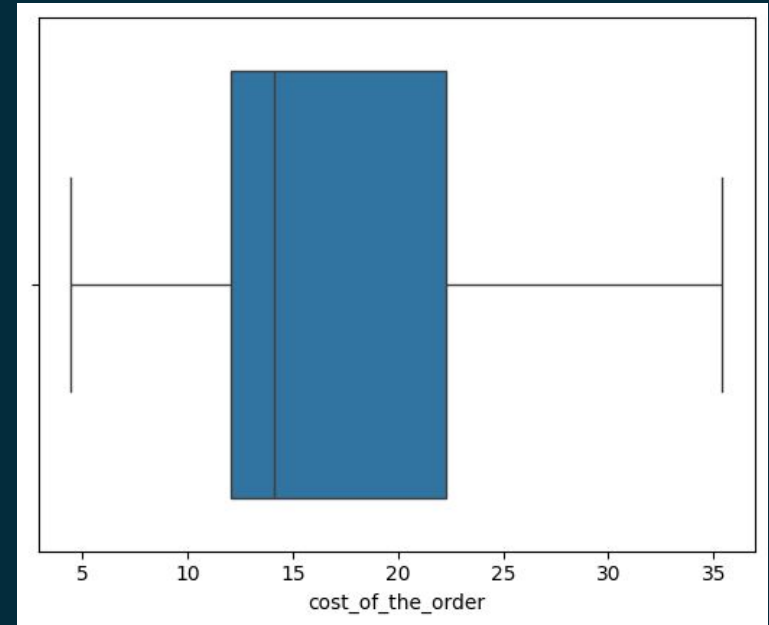
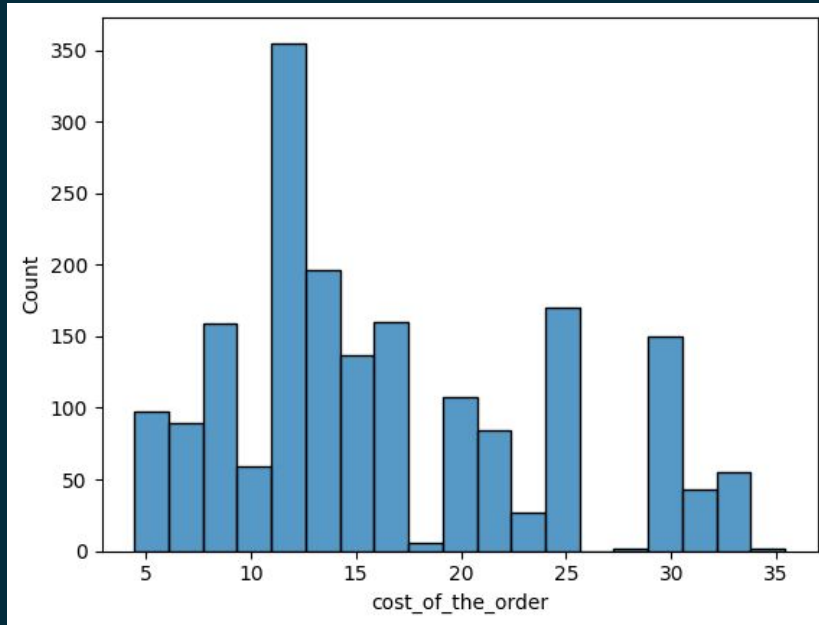
Cuisine



There are 14 different cuisine types in the data. American cuisine is the most ordered, followed by Japanese and Italian.

EDA - Univariate Analysis

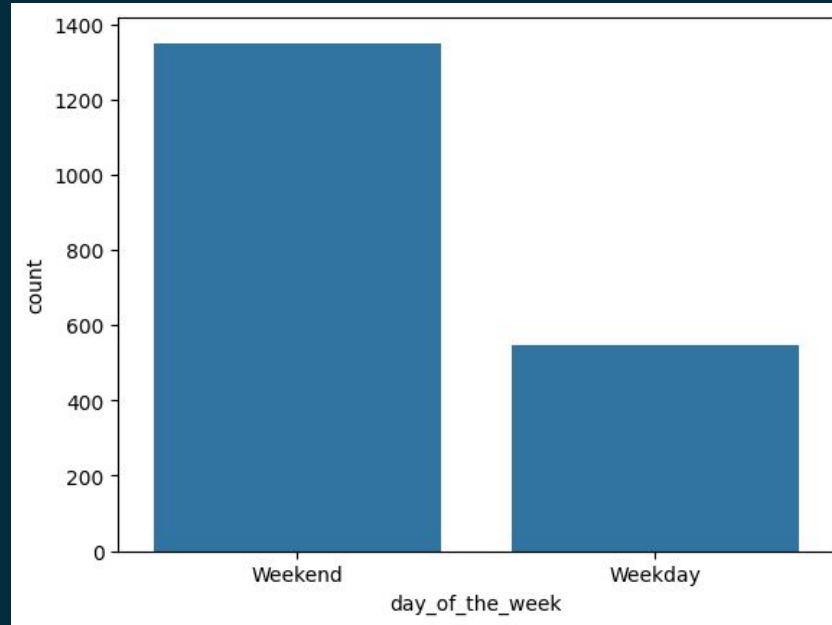
Cost of the Order



The cost of the orders tends to be skewed fairly right. With the median at around 14 dollars for the cost of the order, the minimum is 5 dollars and the maximum goes up to 35 dollars. The range is 30 dollars.

EDA - Univariate Analysis

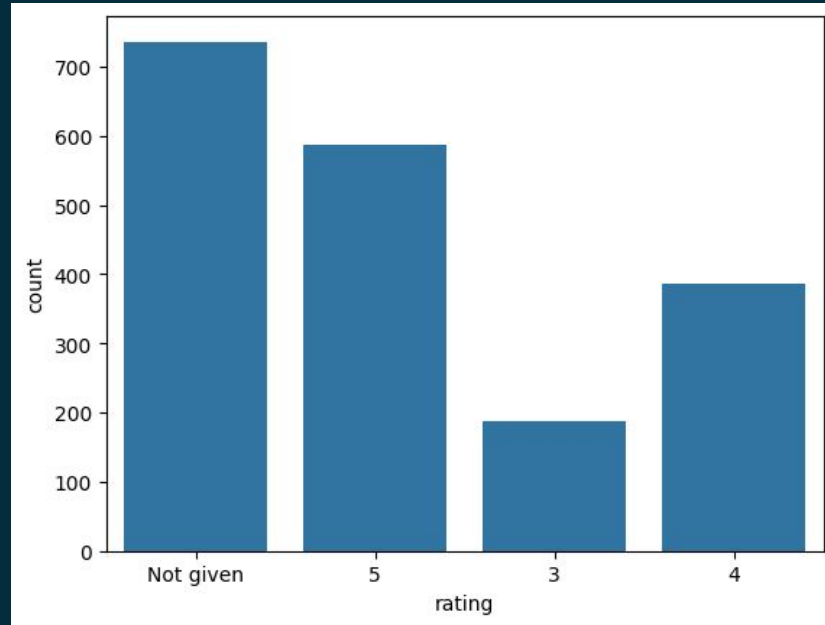
Day of the Week



The weekend sees a large jump in the amount of orders than when compared to weekdays, which is why marketing on the weekends may be more successful with a larger customer base.

EDA - Univariate Analysis

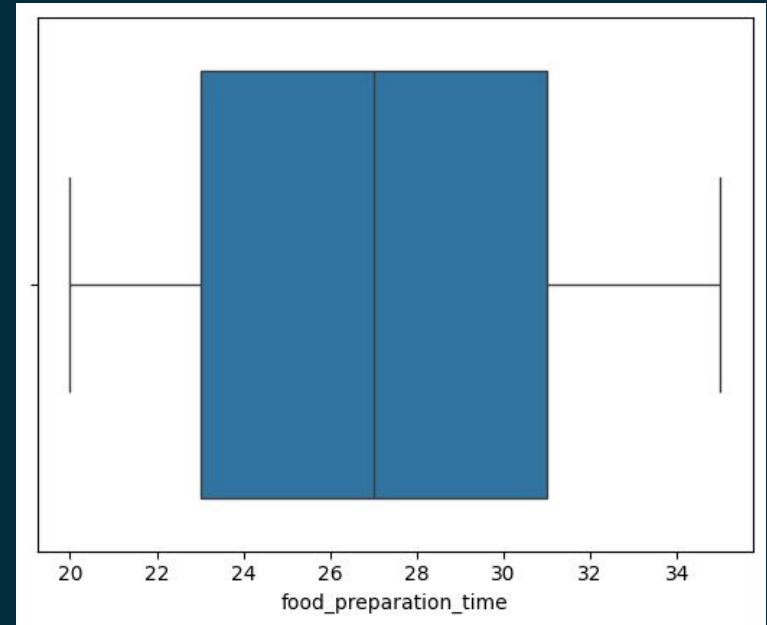
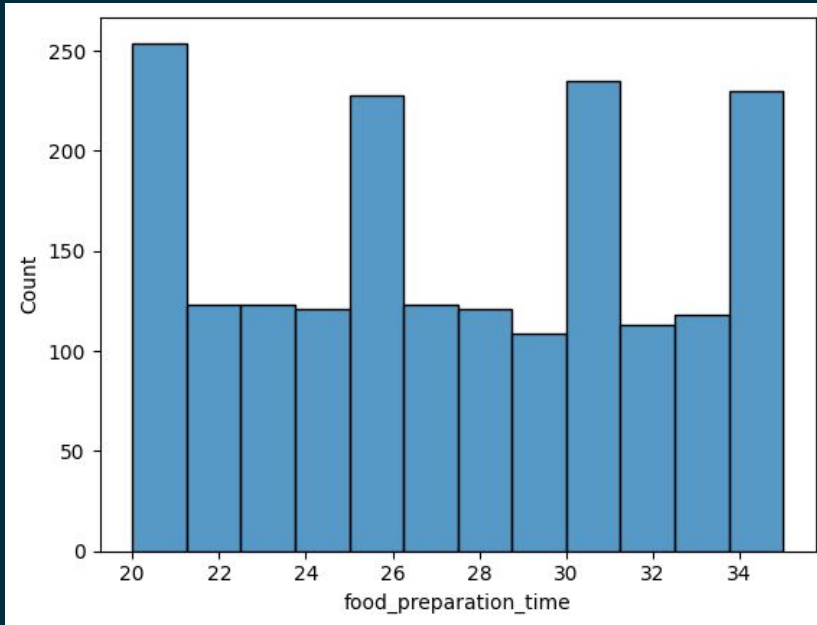
Rating



The column with the highest count would be the not rated column with a count of over 700, followed by 5 star ratings and 4 star ratings. 3 star ratings are the lowest in count

EDA - Univariate Analysis

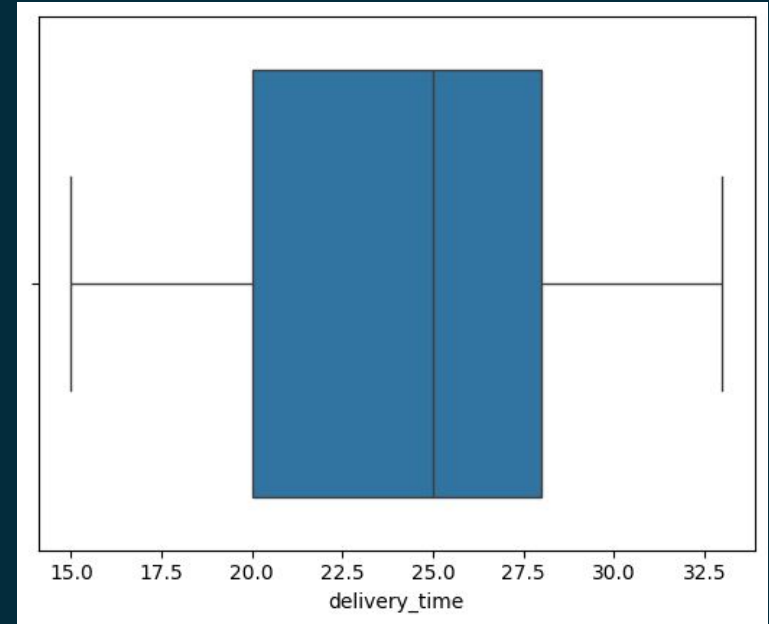
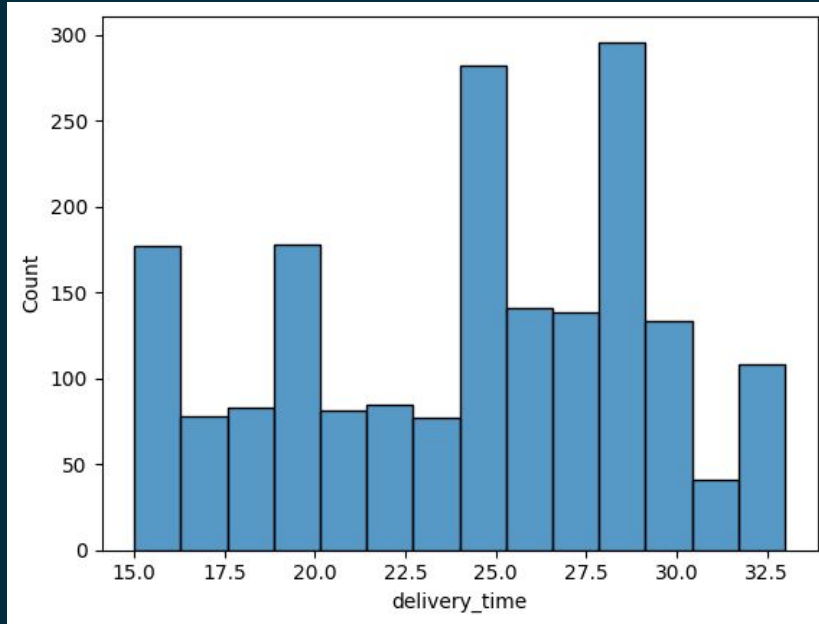
Food Preparation Time



The range for food prep time is around 15 minutes, and the median is around 27 minutes. 50% of food prep time falls within 23 and 31 min. With no strong skewing, the data shows a uniform distribution with no obvious outliers.

EDA - Univariate Analysis

Delivery Time



The data shows a slight skew to the left, with the range around 18 min. The median lies at 25 minutes, and this data shows no obvious outliers. The frequency at 28 minutes is higher than the rest of the times, which is important to note.

EDA - Univariate Analysis

➤ Top 5 Restaurants:
(in terms of orders received)

- Shake Shack (219)
- The Meatball Shop (132)
- Blue Ribbon Sushi (119)
- Blue Ribbon Fried Chicken (96)
- Parm (68)

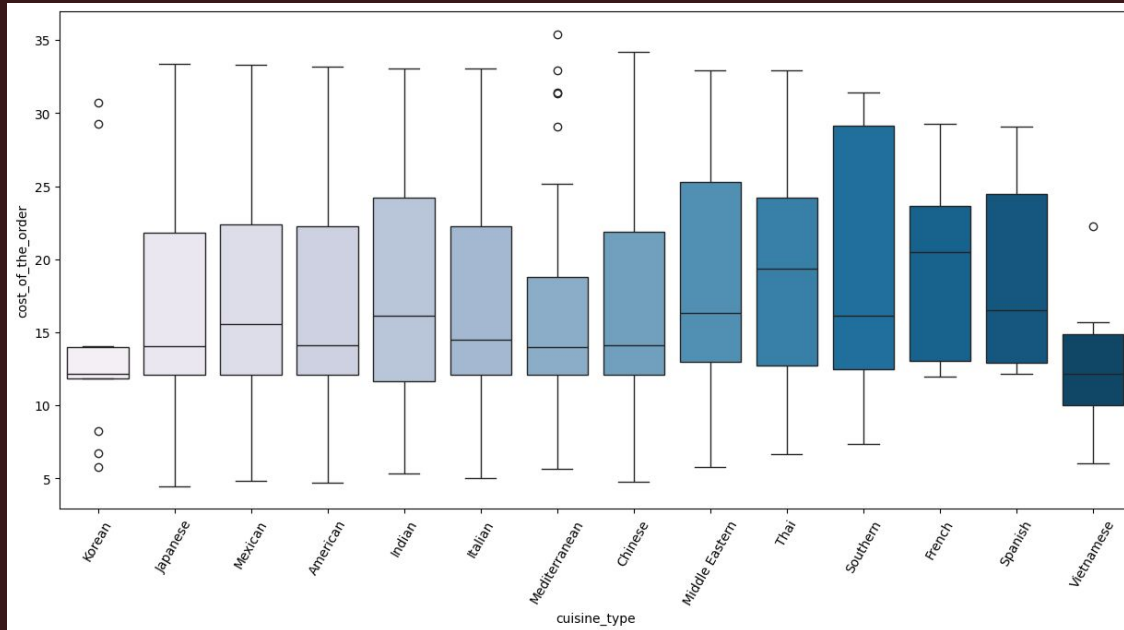
★ American is the most popular cuisine on weekends

- No. of Orders above \$20: 555
- 29.24% of orders cost above \$20
- Mean delivery time for this dataset is 24.16 minutes
- Top 5 most frequent customers:

customer_id	count
52832	13
47440	10
83287	9
250494	8
259341	7

EDA - Multivariate Analysis

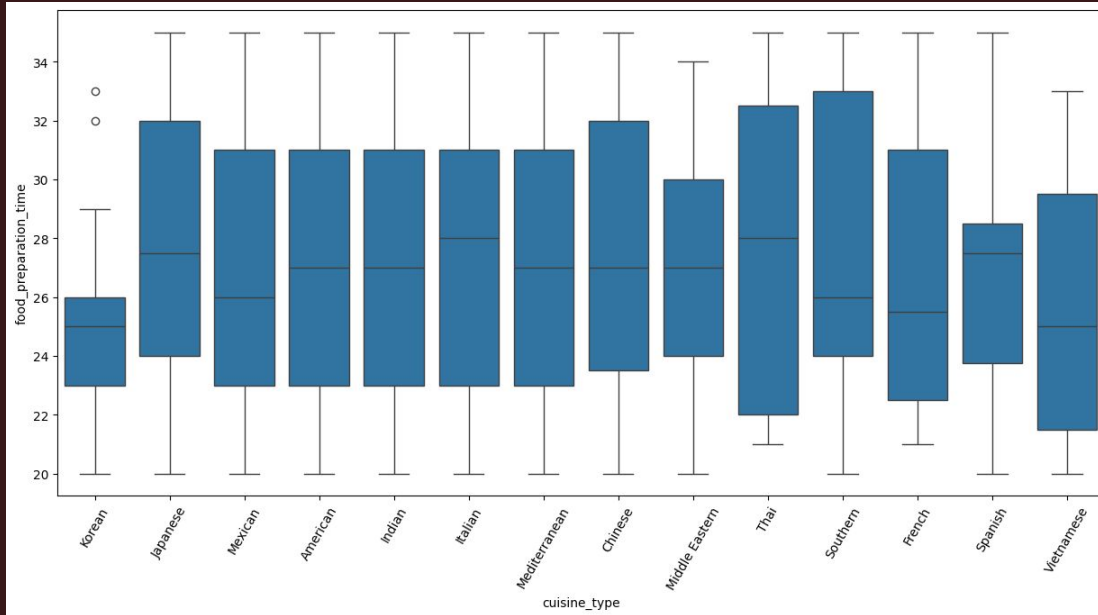
Cuisine vs. Cost of the Order



- Some cuisines (Japanese, Italian) have higher median costs than others.
- Bring in more customers for premium cuisines, run promotions to sell more budget friendly ones.

EDA - Multivariate Analysis

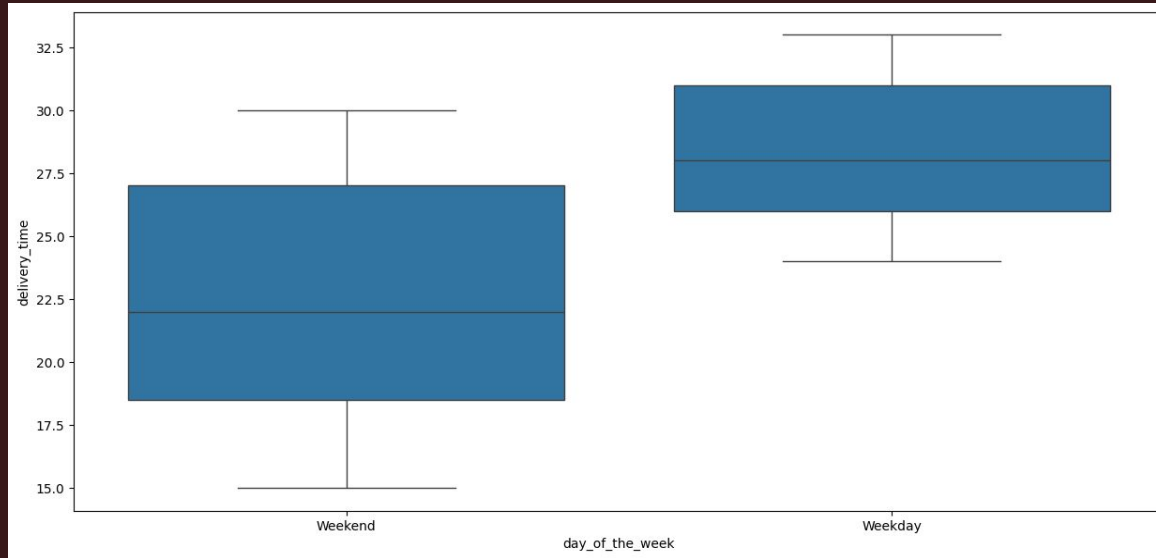
Cuisine vs. Food Preparation Time



- Some cuisines take longer to prepare (Italian, Thai, Japanese).
- As a result, faster delivery times should be emphasized for cuisines that have longer prep time to have better overall customer satisfaction.

EDA - Multivariate Analysis

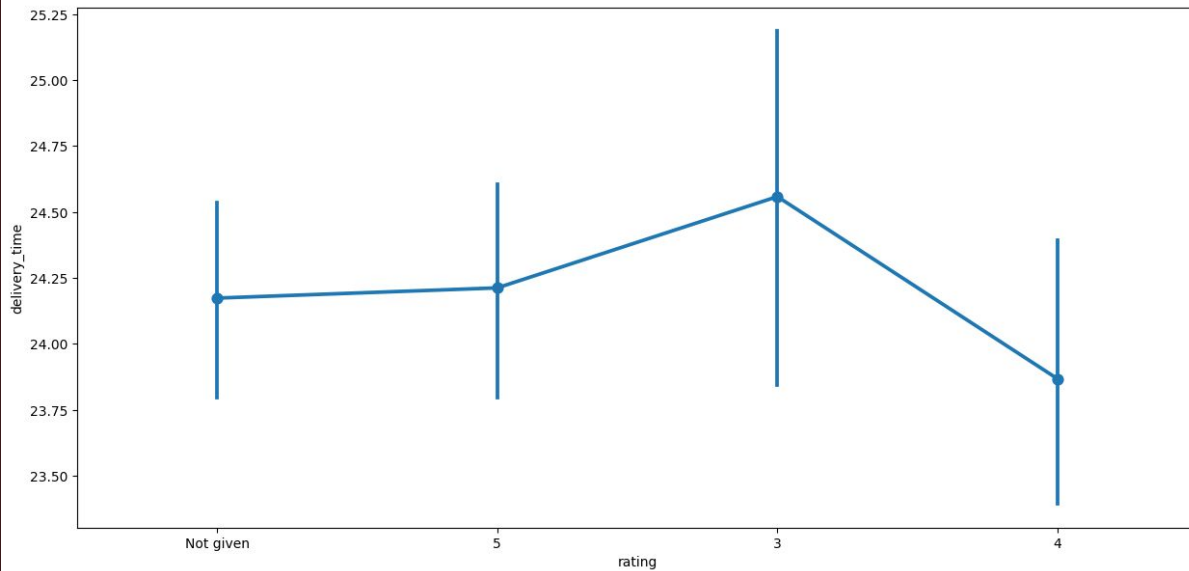
Day of the Week vs. Delivery Time



- Weekdays have longer delivery times which could be a result of traffic or fewer delivery sources during the week.
- We must adjust staffing and study traffic patterns accordingly.

EDA - Multivariate Analysis

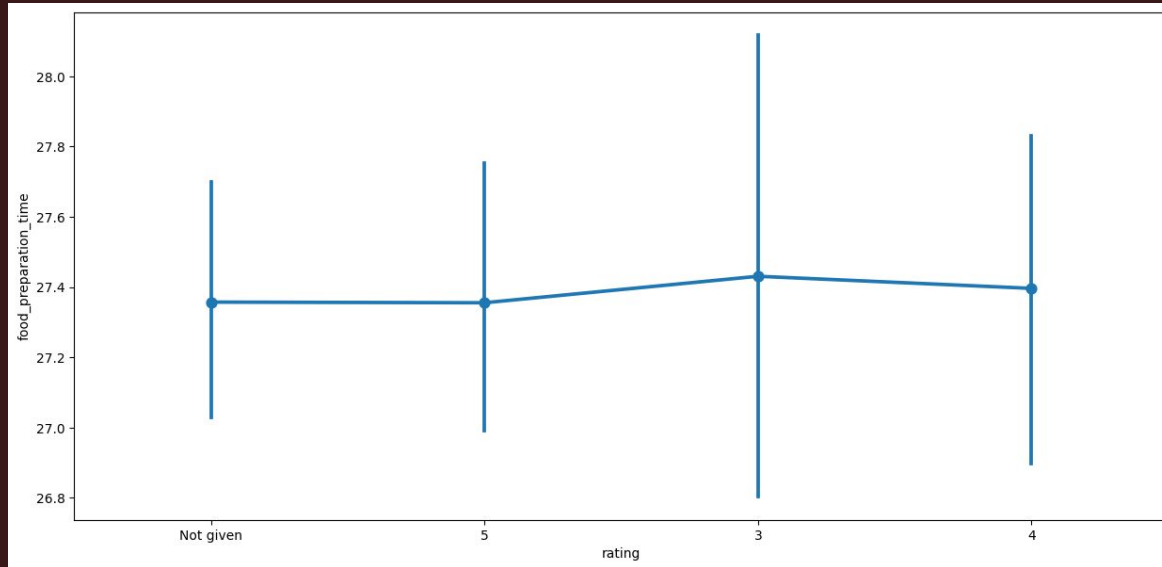
Rating vs. Delivery Time



- Shorter delivery times seem to have higher ratings, and vice versa.
- Speed of delivery is key in customer satisfaction.

EDA – Multivariate Analysis

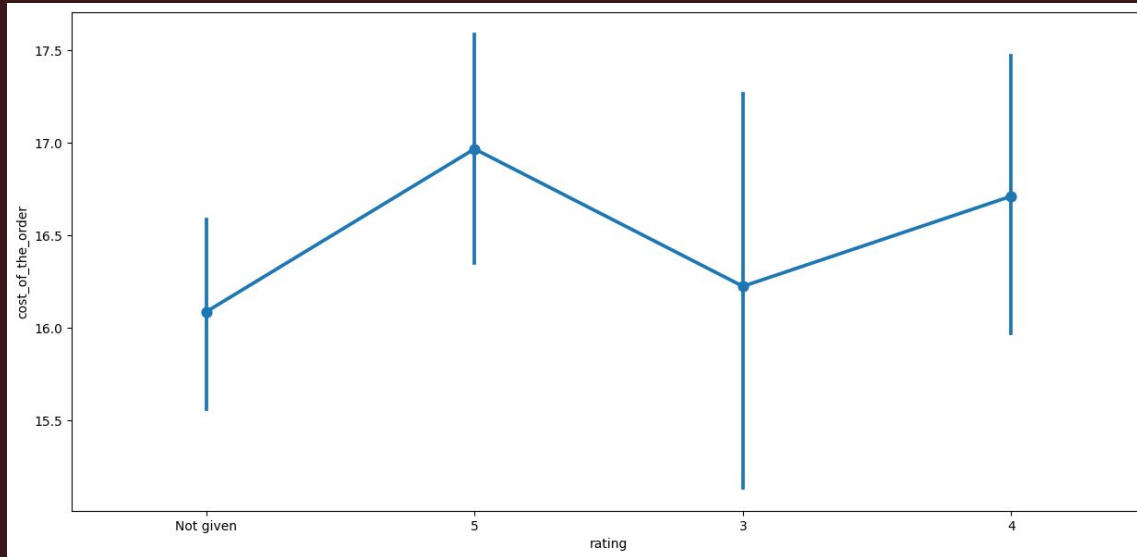
Rating vs. Food Preparation Time



- Shorter food prep times tend to have higher ratings and vice versa, but sometimes extremely fast prep doesn't always mean high ratings.
- Balance food prep time and quality to ensure customer satisfaction.

EDA – Multivariate Analysis

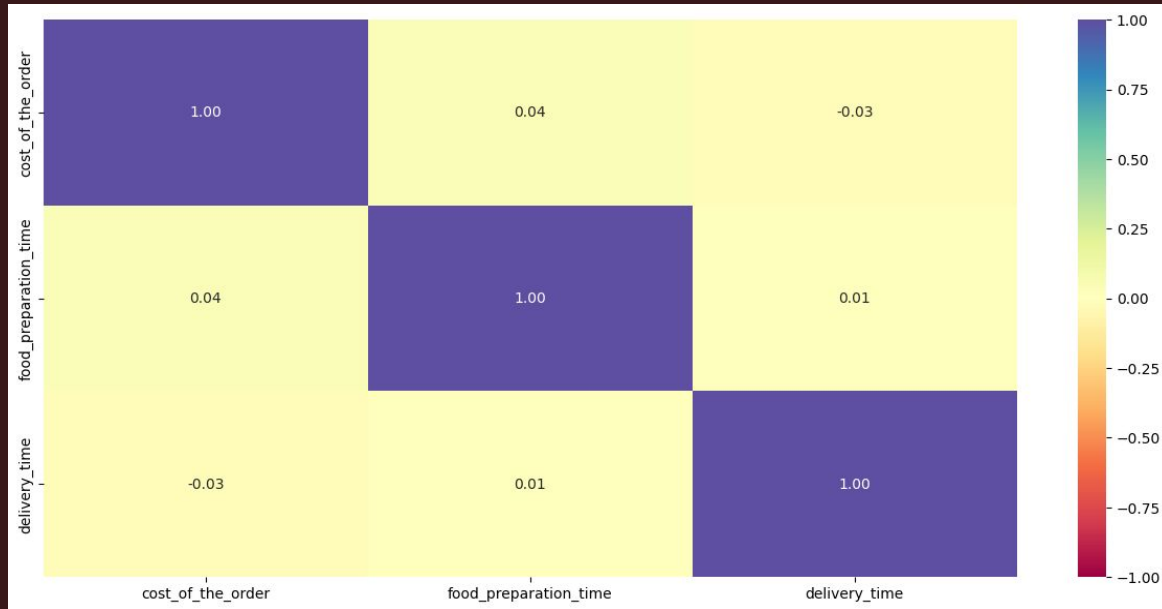
Rating vs. Cost of Order



- Orders with mid level pricing have the highest reviews, while there is more variability in the extremes.
- Need to ensure high priced food is also high quality for high levels of customer satisfaction.

EDA – Multivariate Analysis

Correlations



- Strong positive correlation between prep time and delivery time. Improving kitchen efficiency leads to lower delivery times.
- Weak relationship between cost and timing. Pricing changes won't solve timing issues.

EDA - Multivariate Analysis

- Restaurants with more than 50 ratings and an average rating above 4 for a promotional offer:
 - The Meatball Shop (4.51)
 - Blue Ribbon Fried Chicken (4.32)
 - Shake Shack (4.28)
 - Blue Ribbon Sushi (4.22)

Mean delivery time on weekends: 22 min
Mean delivery time on weekdays: 28 min

★ Company's net revenue after applying a 25% charge on orders over \$20 and a 15% charge on orders over \$5 is over \$6166.30

★ The percentage of orders that take more than 60 minutes from placement to delivery is 10.54% with 200 orders.



Thank you