



Project: FoodHub Data Analysis

Business Overview:

- Dataset of a food aggregator company **FoodHub** that offers access to multiple restaurants through an online application using a smartphone.
- The data set contains the food delivery data of **1,898 orders**.
- The purpose of the analysis is to analyze the demand of different restaurants which enable the company to enhance the customer experience.

Objective:

The analysis seeks to answer the following questions:

- 1.How many orders are not rated?
- 2.How are each variable distributed?
- 3.Which are the top 5 restaurants in terms of the number of orders received?
- 4.Which is the most popular cuisine on weekends?
- 5.What percentage of the orders cost more than 20 dollars?
- 6.What is the mean order delivery time?
- 7.The company has decided to give 20% discount vouchers to the top 3 most frequent customers. Find the IDs of these customers and the number of orders they placed.
- 8.Is there any relationship between each variable?
- 9.What is the revenue generated by the restaurants?
- 10.Find the restaurants that have the rating count of more than 50 and average rating greater than 4 so that the company could provide a promotional offer in the advertisements

11. Find the net revenue generated by the company across all orders considering the company charges the restaurants 25% on the orders having cost greater than 20 dollars and 15% on the orders having cost greater than 5 dollars.
12. What percentage of orders take more than 60 minutes to get delivered from the time the order is placed considering the company wants to analyze the total time required to deliver the food.
13. The company wants to analyze the delivery time of the orders on weekdays and weekends. How does the mean delivery time vary during weekdays and weekends?

Data Abstract:

The dataset comprises 1,898 rows and 9 columns, featuring information such as order IDs, customer IDs, restaurant names, cuisine types, cost of orders, day of the week, ratings, food preparation time, and delivery time.

The datatype of each columns:

- order_id int64
- customer_id int64
- restaurant_name object
- cuisine_type object
- cost_of_the_order float64
- day_of_the_week object
- rating object
- food_preparation_time int64
- delivery_time int64

Number of missing data: None

Statistical summary:

- Minimum preparation time: 20 minutes
- Average preparation time: 27 minutes
- Maximum preparation time: 35 minutes

Additional Information:

- Minimum delivery time: 15 minutes
- Average delivery time: 25 minutes
- Maximum delivery time: 33 minutes

Orders that are not rated: 736 which is 38.9% of the total count of orders.

Restaurants that generate highest revenues are **Shake Shack** followed by **The Meatball Shop**, **Blue Ribbon Sushi** and **Blue Ribbon Fried Chicken**

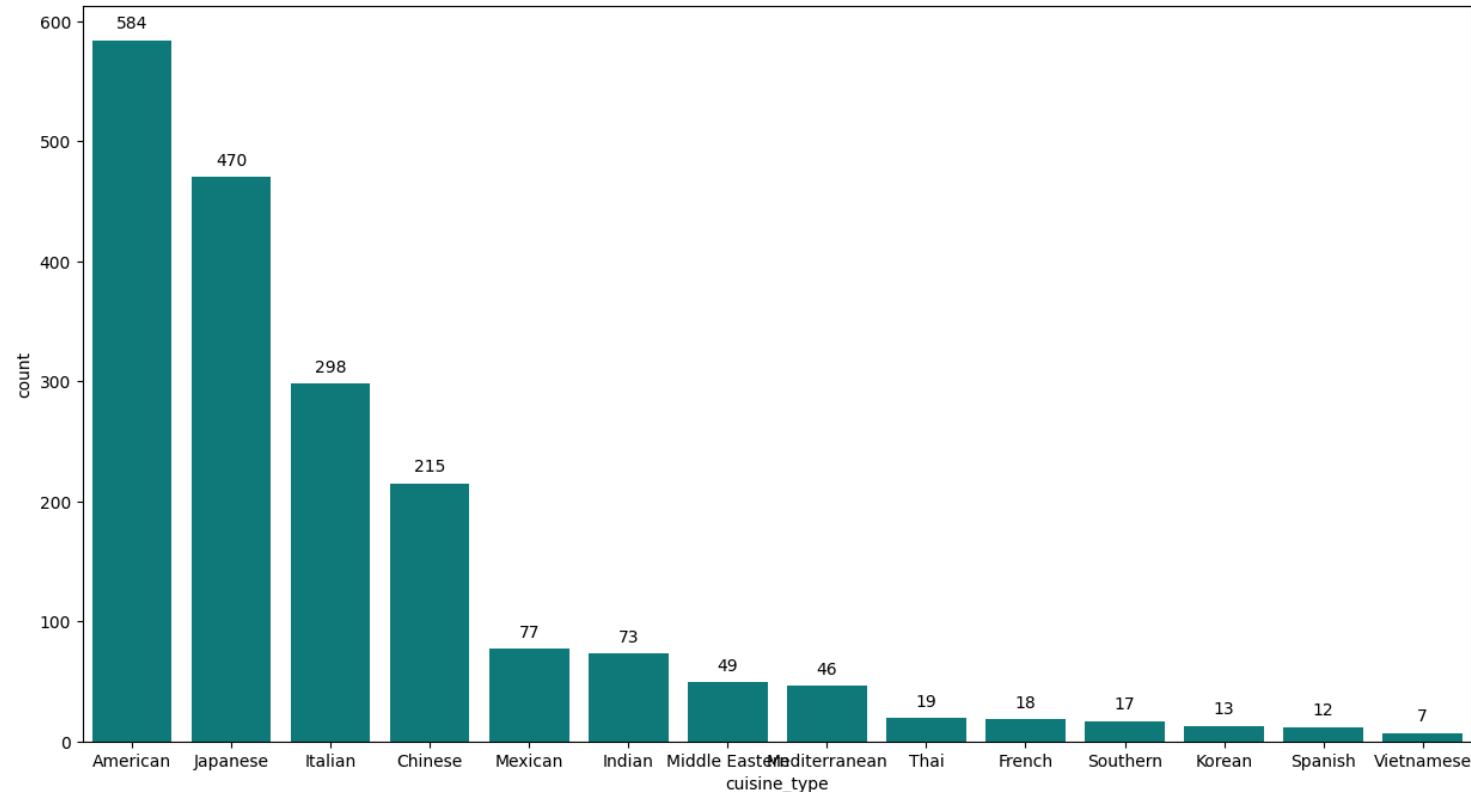
Univariate Analysis:

Number of unique order_id: 1898

Number of unique customers : 1200

Number of unique restaurant name: 178

Cuisine Type

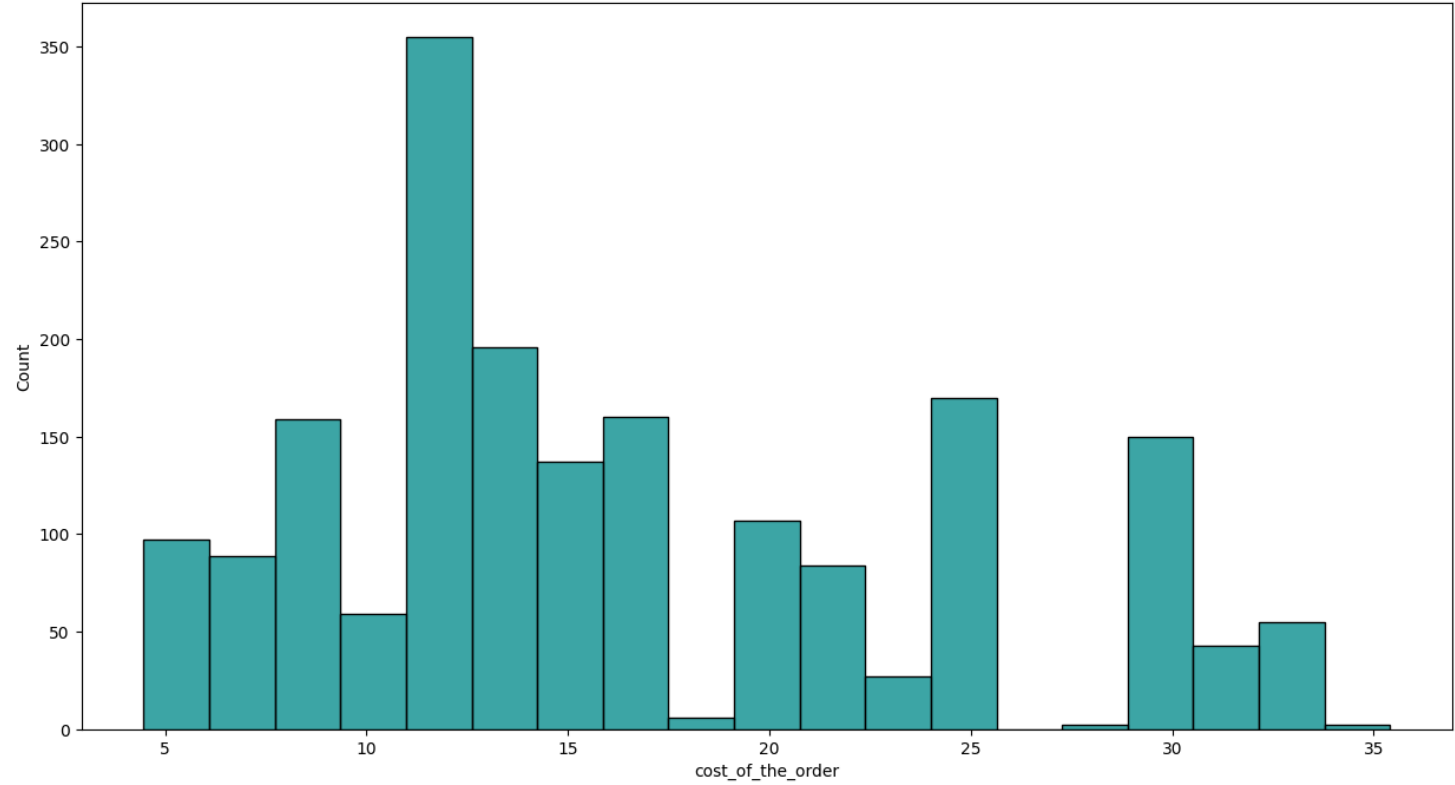


Number of unique cuisine type: 14

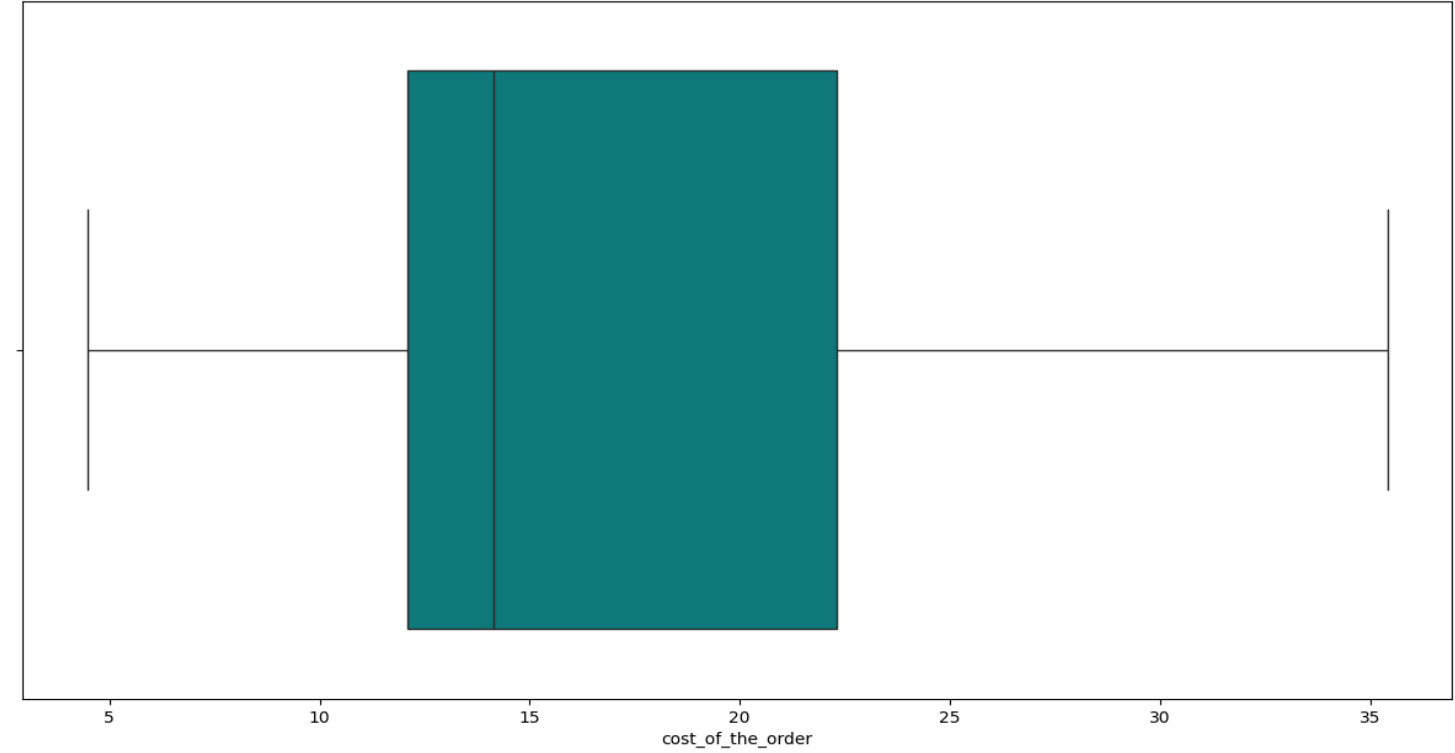
Top 3 cuisine: American (584 customer choose american)
Japanese(470 customers choose japanese)
Italian(298 customers choose Italian)

Bottom 3 cuisine: Vietnamese(7 customers)
Spanish(12 customers)
Korean(13 customers)

Cost of the Order

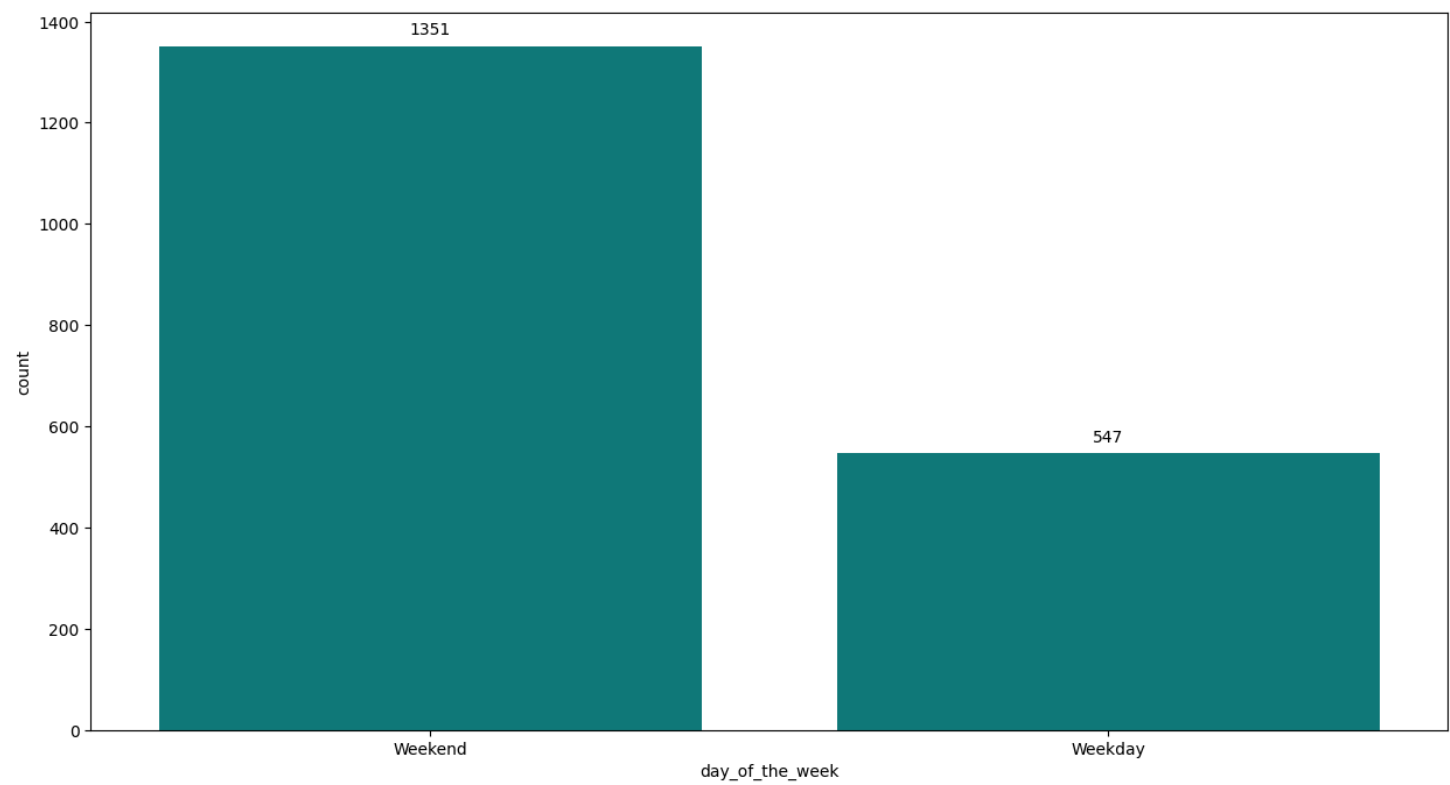


Majority of the order counts falls between 11\$ and 14\$ and the least is found for ~18\$, ~28, and ~35\$



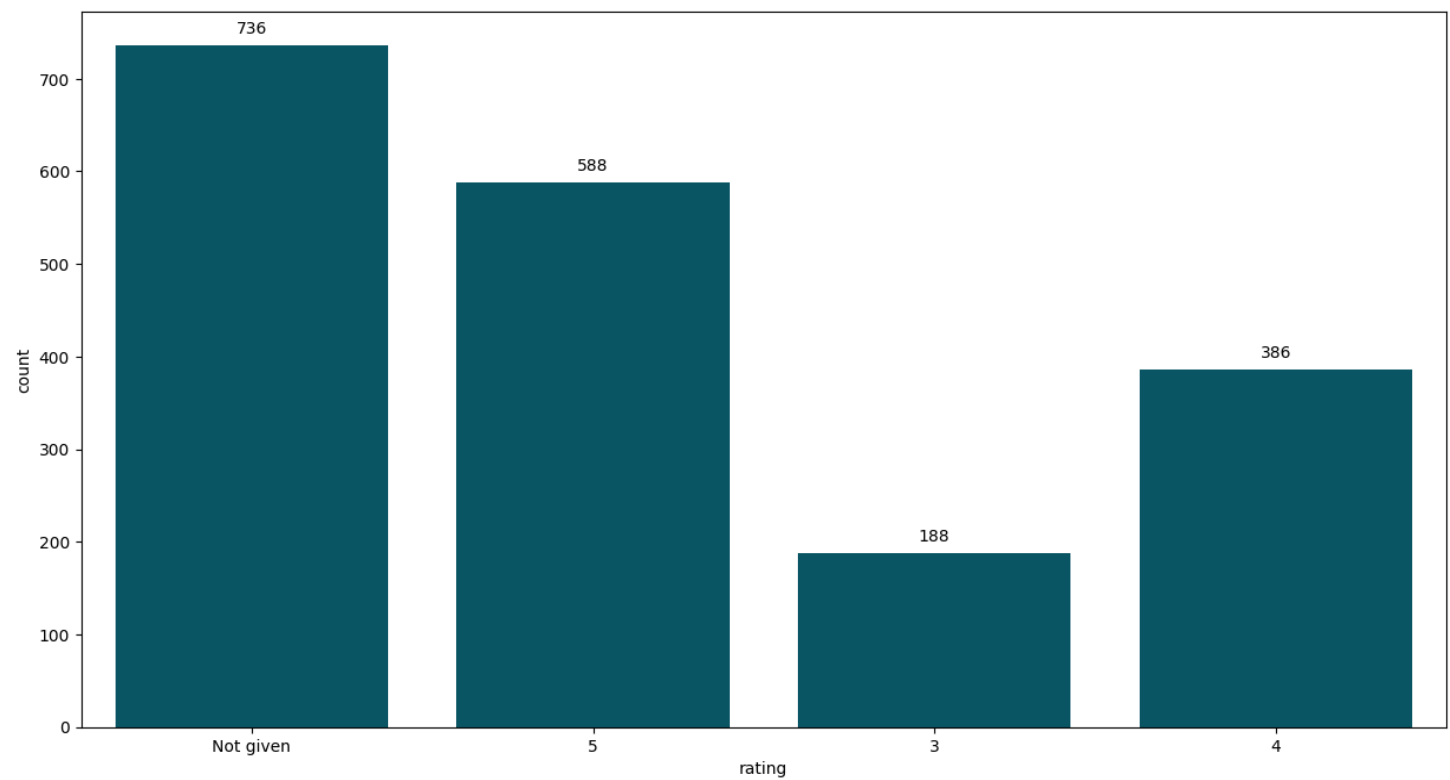
Minimum order value: 4\$
Maximum order value: 35\$
Mean order value: 16\$

Day of the week



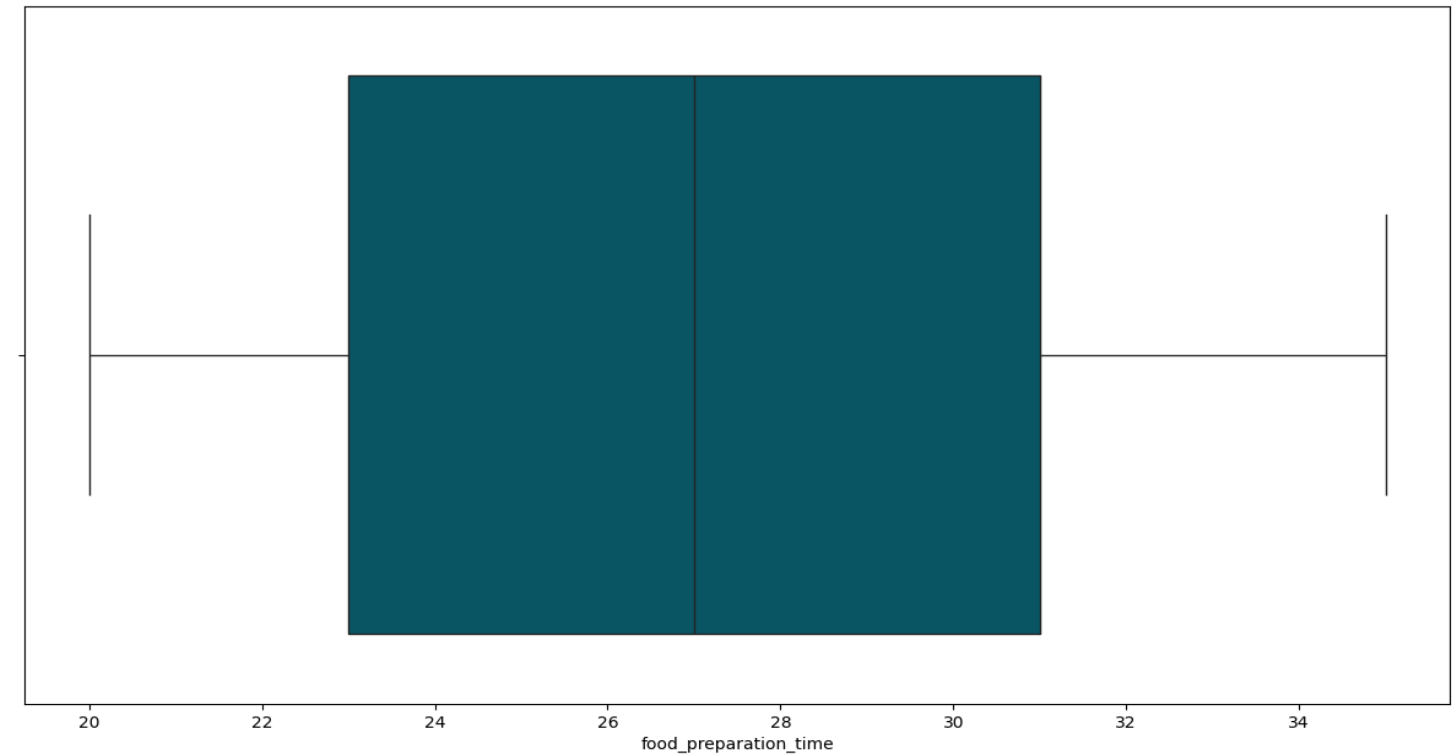
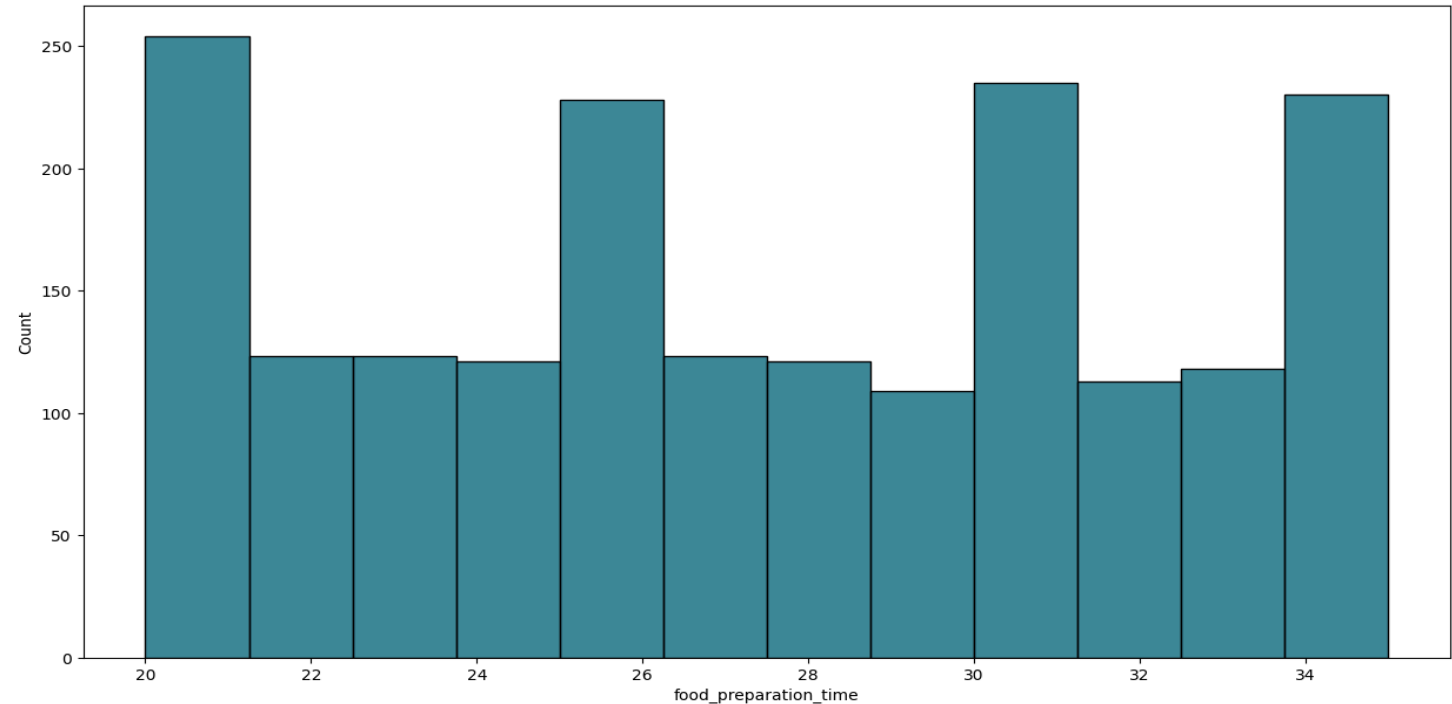
Unique value of day of the week:
Weekend: 1351
Weekday: 547

Rating



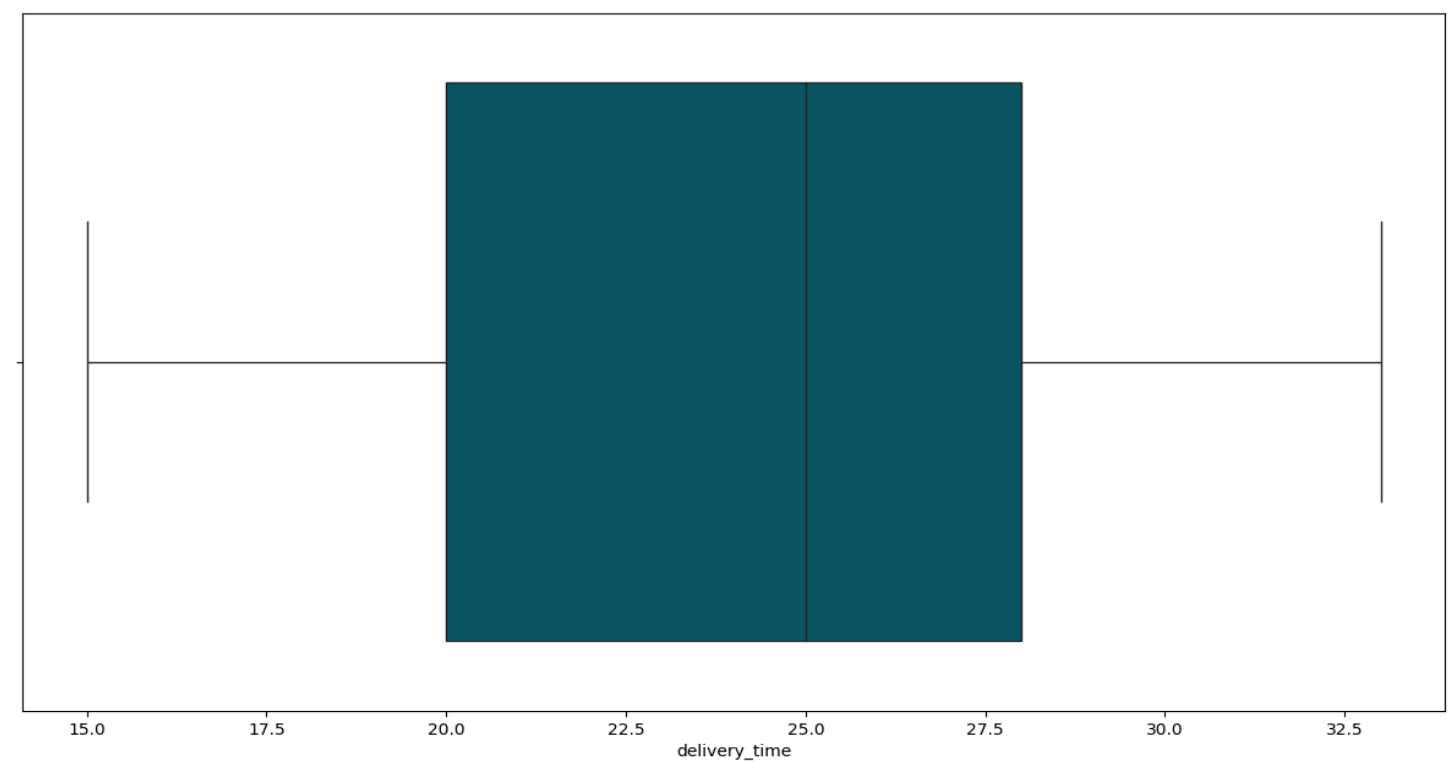
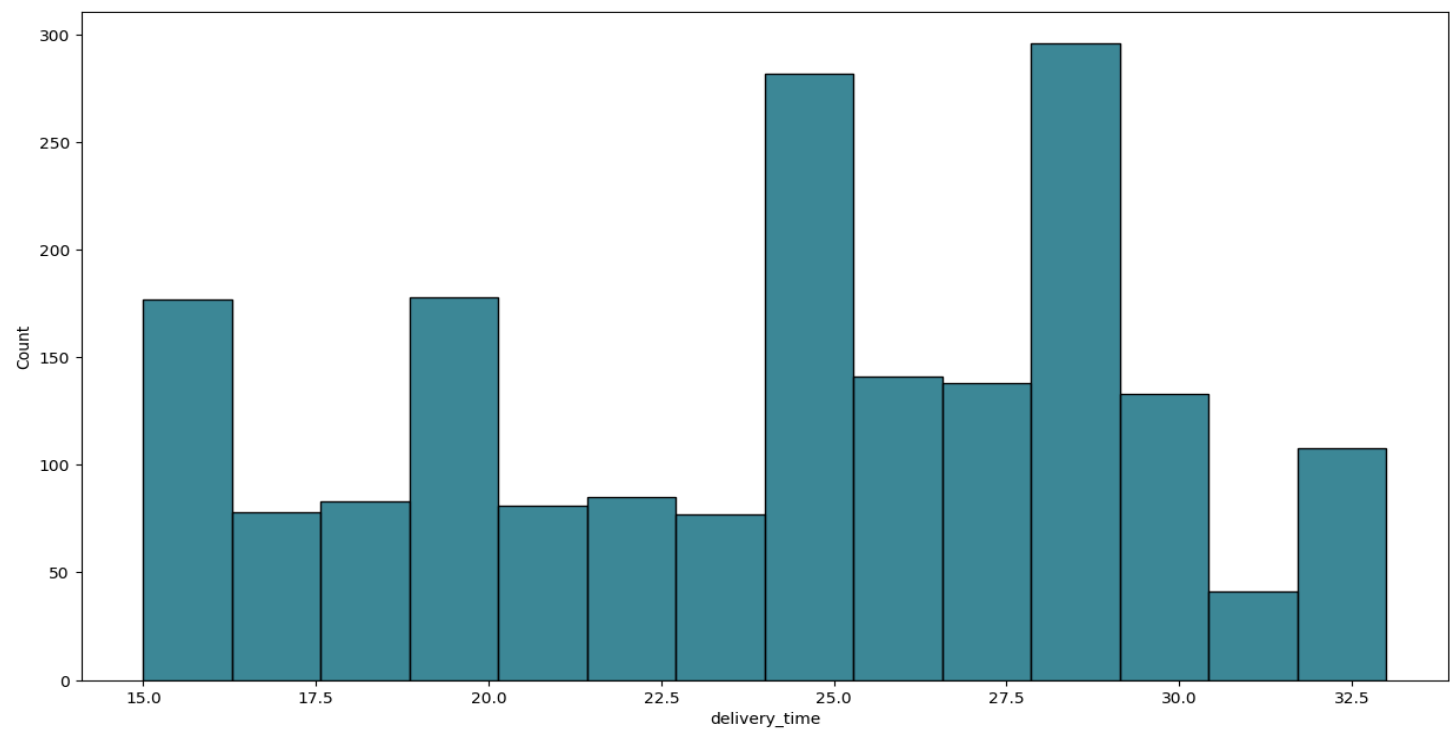
Not given: 736
Count of Rating 5: 588
Count of Rating 4: 386
Count of Rating 3: 188

Food Preparation Time



Minimum food preparation time: 20 minutes
Average food preparation time: 27 minutes
Maximum food preparation time: 35 minutes

Delivery Time

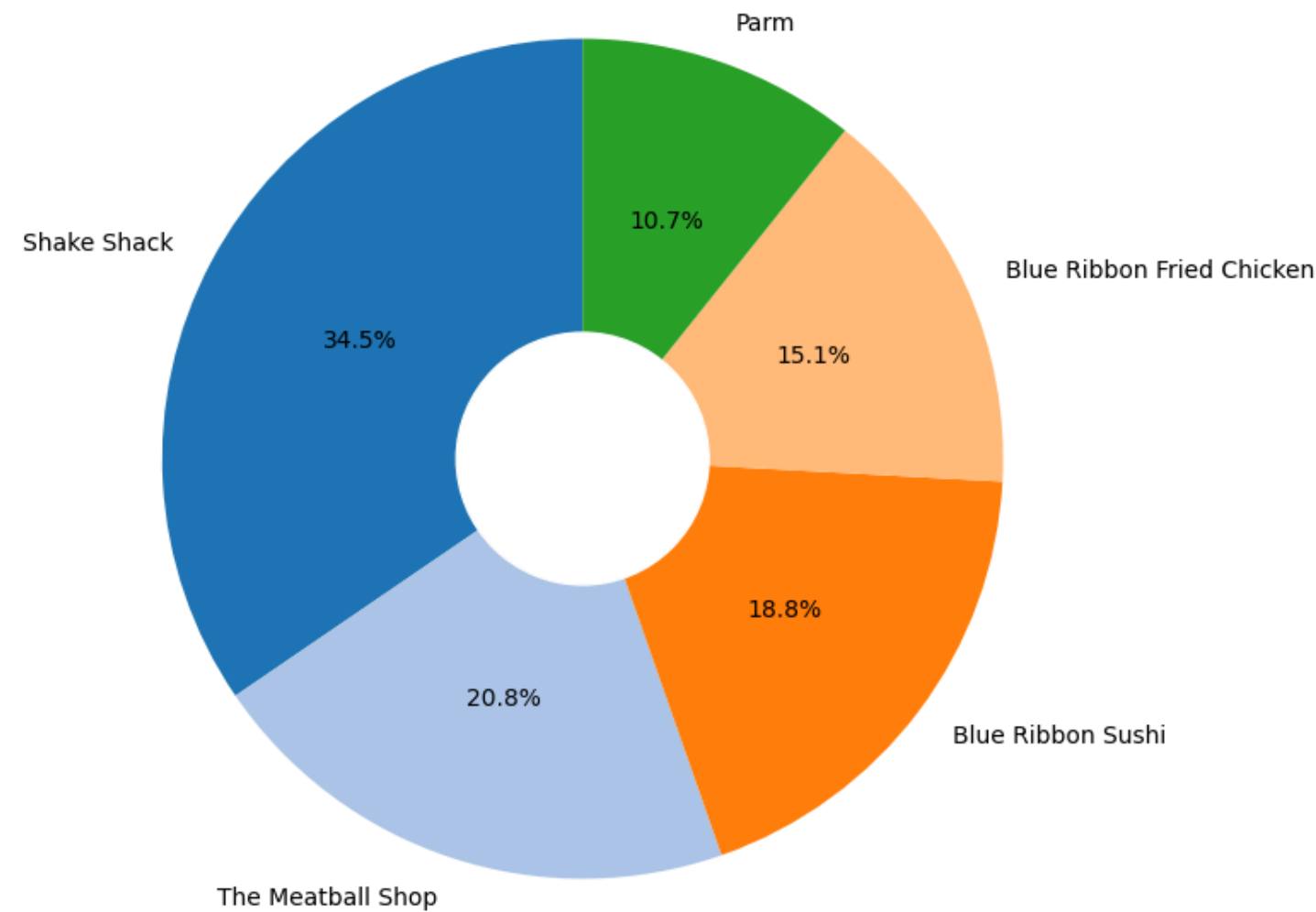


Majority of the orders have been delivered in 25 minutes and 28 minutes and approx 180 orders have been delivered in 15 minutes

Minimum delivery time: 15 minutes
Average delivery time: 25 minutes
Maximum delivery time: 33 minutes

Which are the top 5 restaurants in terms of the number of orders received?

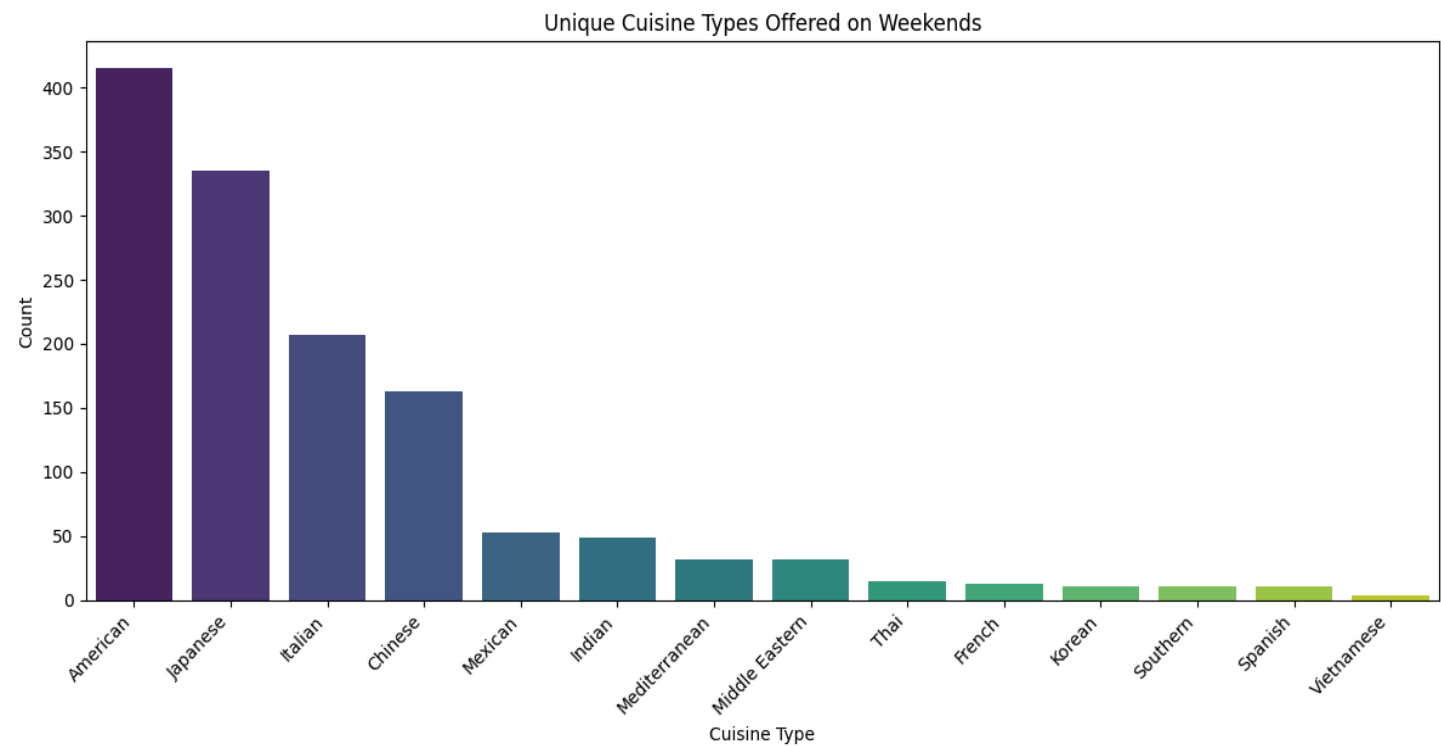
Distribution of Orders by Top 5 Restaurants



Shake shack	219 orders
The Meatball Shop	132 orders
Blue Ribbon Sushi	119 orders
Blue Ribbon Fried Chicken	96 orders
Parm	68 orders

Which is the most popular cuisine on weekends?

The most popular cuisine on weekends are **Korean, Japanese, American, Italian, Mexican, Mediterranean, Chinese, Indian, Thai, Southern, French, Spanish, Middle Eastern, and Vietnamese**



Among these cuisines American, Japanese, Italian, Chinese, Mexican, and Indian are the top favorites.

What percentage of the orders cost more than 20 dollars?

The number of total orders that costs above 20 dollars is :555
Percentage of orders above 20 dollars is 29.24%

What is the mean order delivery time?

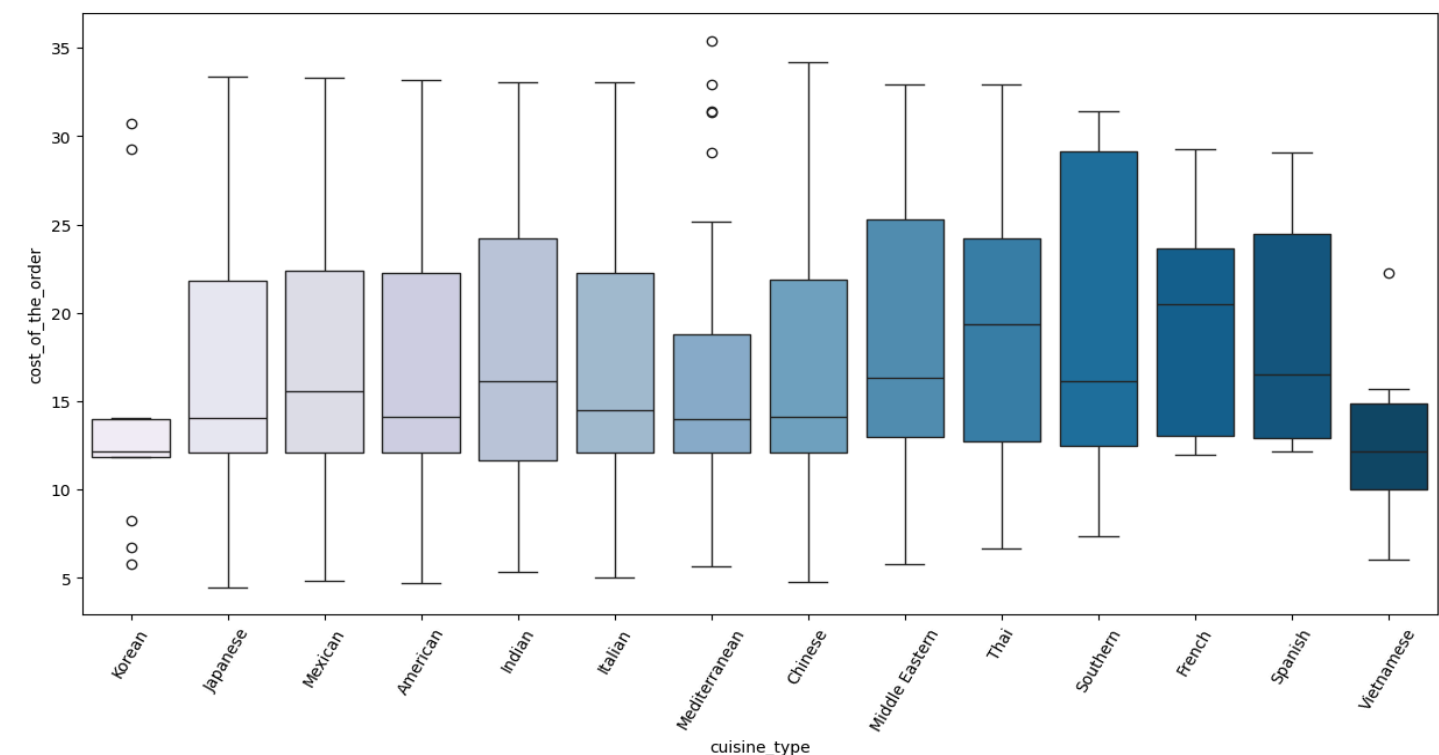
The mean delivery time for this dataset is 24.16 minutes

The company has decided to give 20% discount vouchers to the top 3 most frequent customers. Find the IDs of these customers and the number of orders they placed.

Order id:	52832	(13 orders)
	47440	(10 orders)
	83287	(9 orders)
	250494	(8 orders)
	259341	(7 orders)

Multivariate Analysis

Cuisine vs Cost of the Order



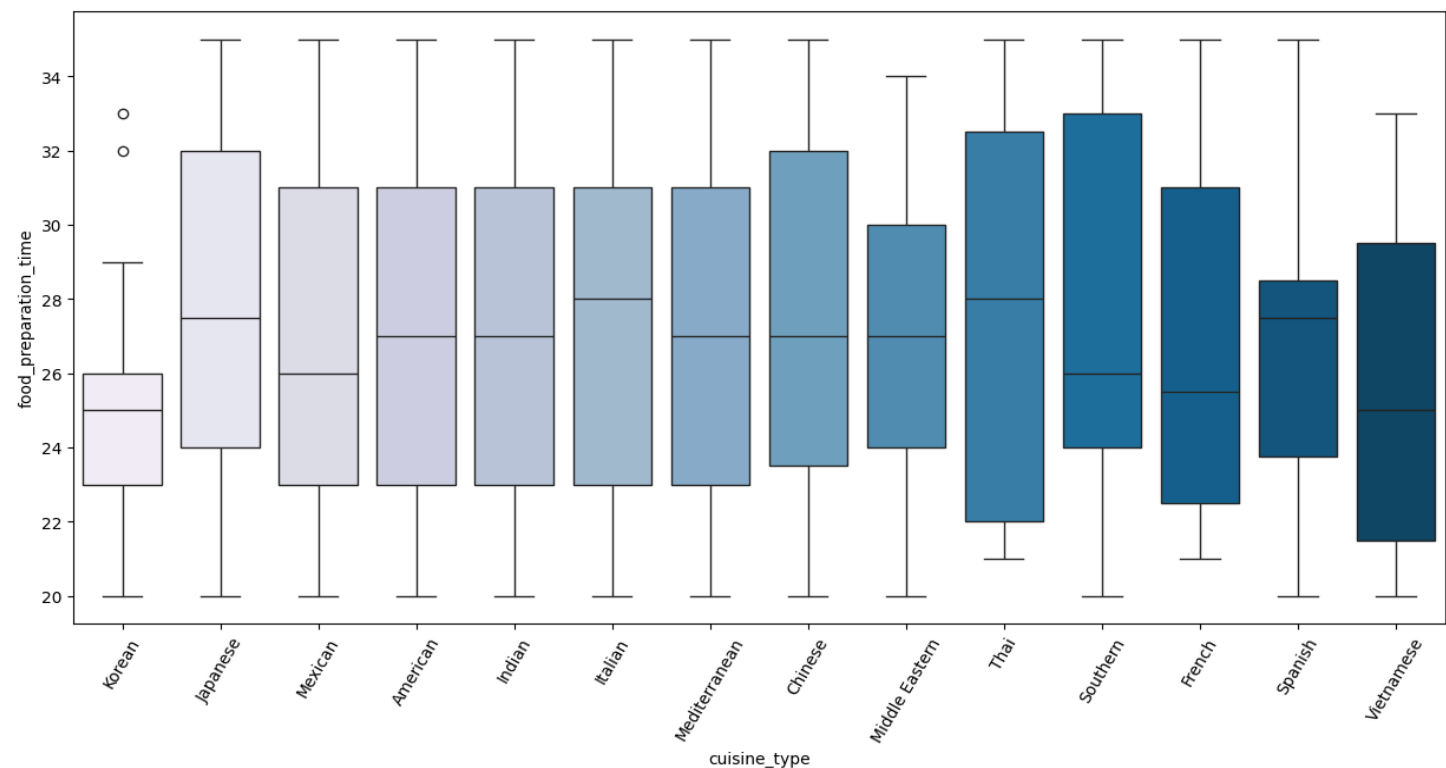
French, Thai, Southern, Middle Eastern, Spanish, Indian, and American have the higher average cost compared to other cuisine types, which indicates that they are more profitable.

From the data set we understand that Korean, Mediterranean, and Vietnamese have outliers which indicates that there are unusual orders compared to other cuisine types.

Southern has the highest order costs above 75%, followed by Middle Eastern, Spanish, and Indian

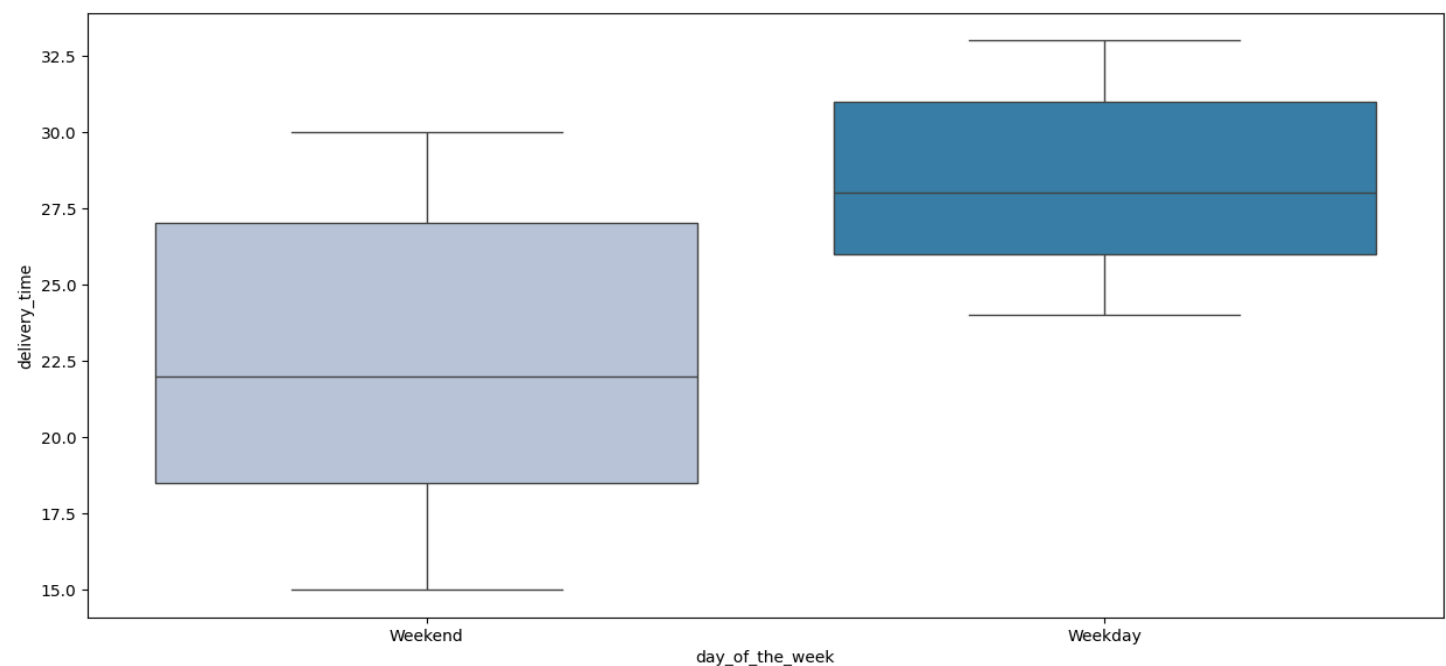
Cost distribution for Southern is highest making it more profitable whereas Korean and Vietnamese have lower cost distribution making it less profitable.

Cuisine vs Food Preparation time



Food preparation time for Thai has the highest variability followed by Southern and French whereas Korean and Spanish have the lowest variability compared to other Cuisines. Italian, Japanese, Thai, and Spanish have the higher average preparation time whereas Vietnamese, French and Korean have the lower average preparation time compared to other cuisines.

Day of the week vs Delivery time

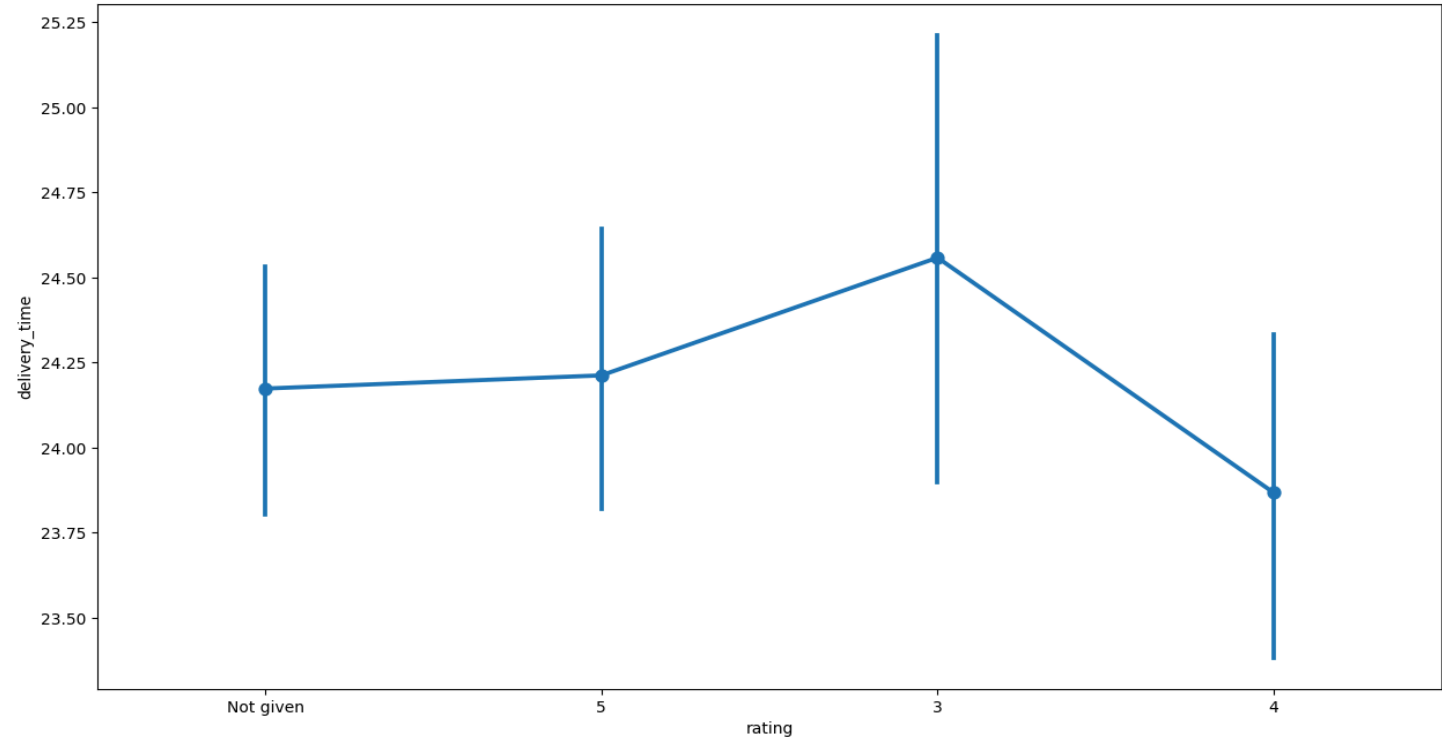


The box plot suggests that delivery time on weekends tends to be more variable than the delivery time on weekdays. This could be due to factors such as increased demand for delivery services on weekends, higher demand for specific types of food on weekends, or even increased traffic during peak hours.

The median delivery time on weekends is 22 minutes whereas for weekdays is 28 minutes.

The minimum delivery time on weekends is 15 minutes whereas for weekdays is 23 minutes may be due to heavy traffic than weekends .

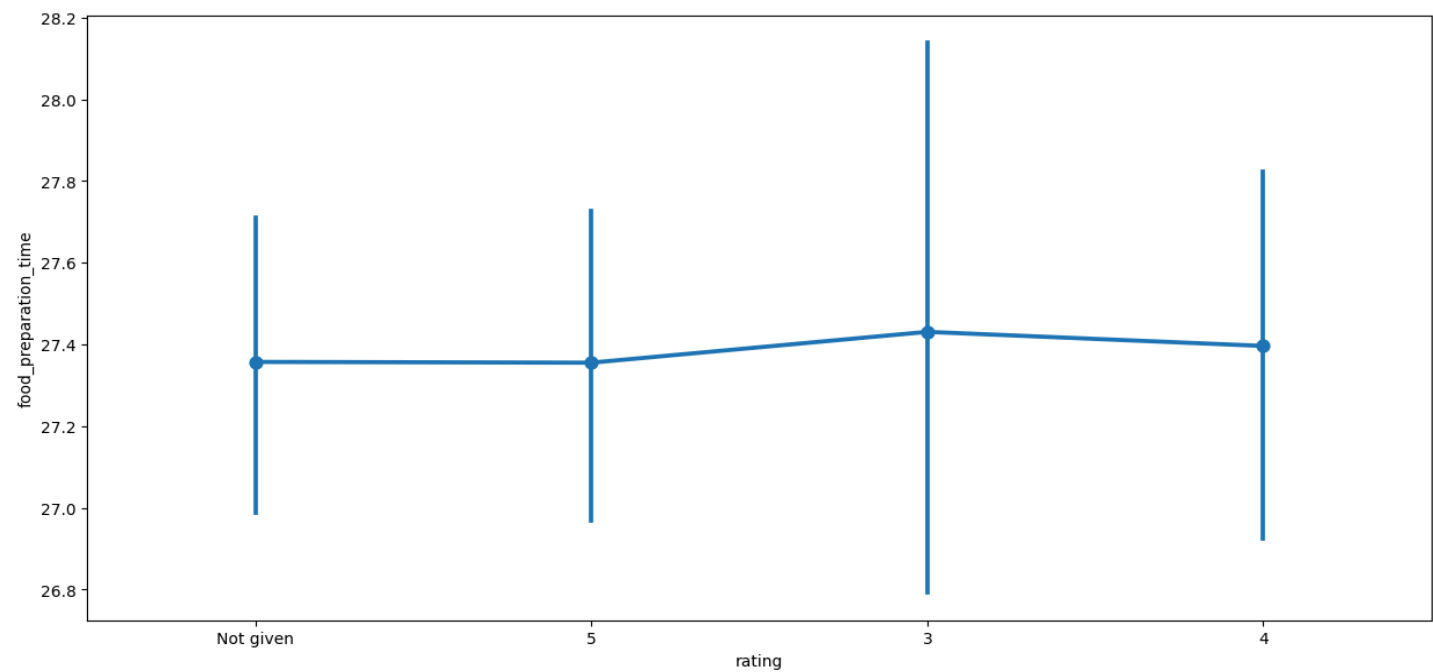
Rating vs Delivery Time



As the delivery time increases, the rating tends to decrease.

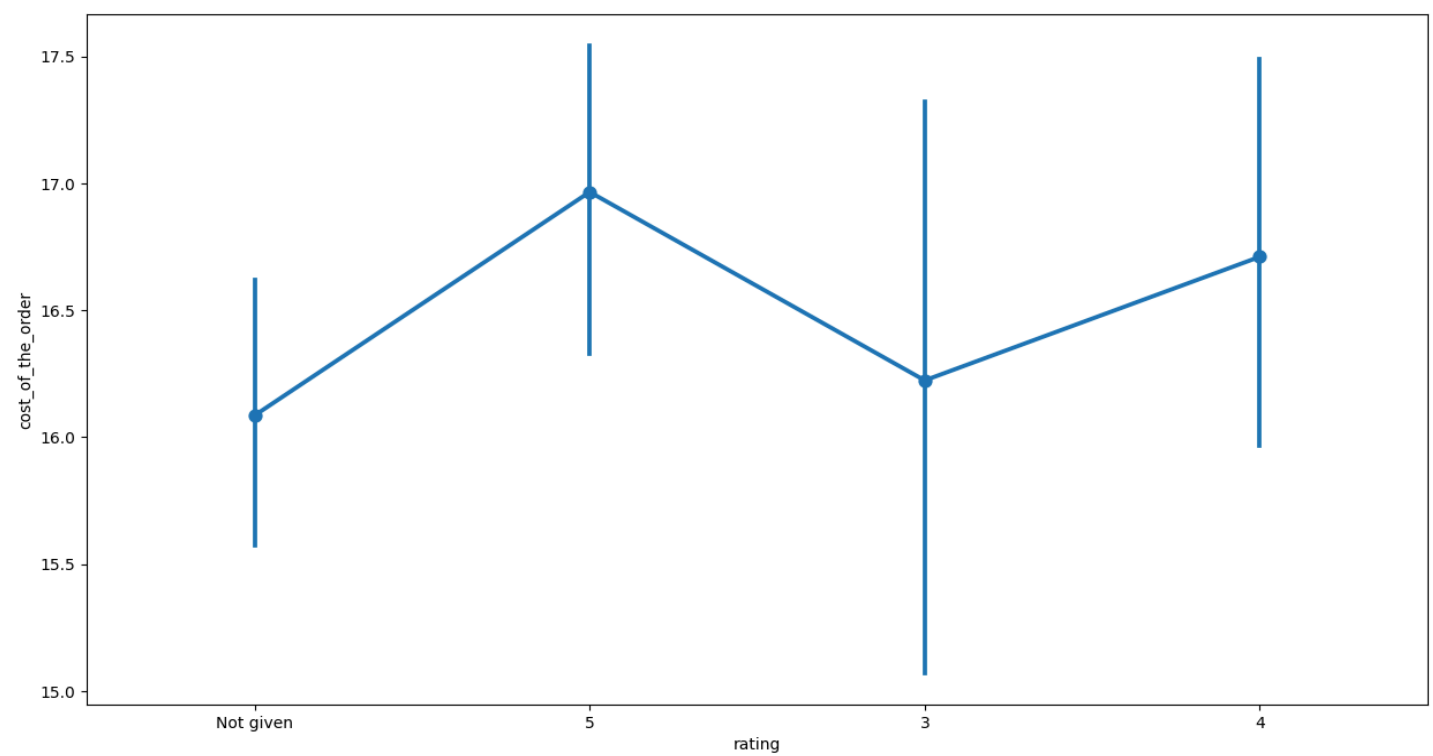
The delivery time for the highest rating (5) is around 24 minutes and the rating starts to decrease as the delivery time increases beyond 24 minutes.

Rating vs Food Preparation Time



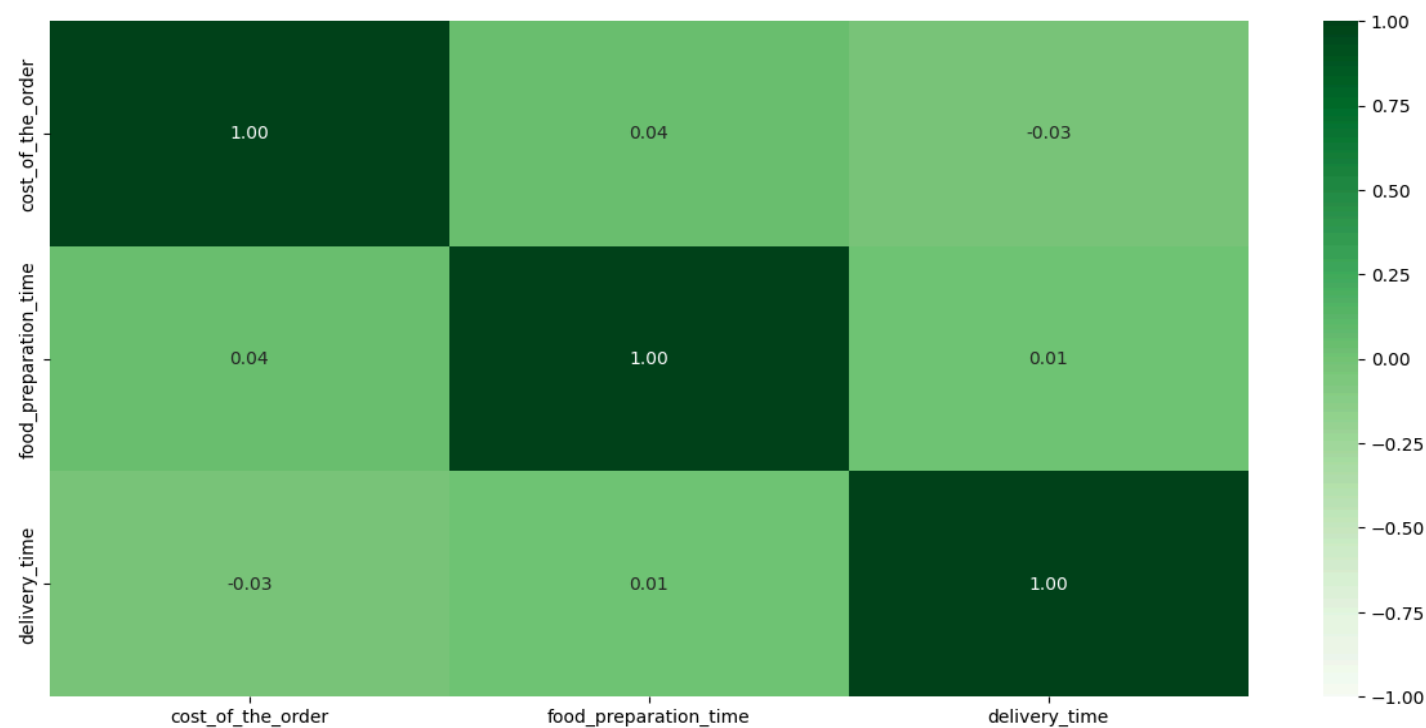
There is no significant change in the rating given due to the varying food preparation time. But considering that, the rating decreases as the food preparation time increases.

Rating vs Cost of the Order



The data says that as the cost of the order increases, rating also increases. As the cost of the order decreases customers tend to give no rating or lower rating.

Correlation between Cost of the order, food preparation time and delivery time



There is no significant positive correlation between the three variables.

Find the restaurants that have the rating count of more than 50 and average rating greater than 4 so that the company could provide a promotional offer in the advertisements

	restaurant_name	rating
0	The Meatball Shop	4.511905
1	Blue Ribbon Fried Chicken	4.328125
2	Shake Shack	4.278195
3	Blue Ribbon Sushi	4.219178

Find the net revenue generated by the company across all orders considering the company charges the restaurants 25% on the orders having cost greater than 20 dollars and 15% on the orders having cost greater than 5 dollars.

Ans: The net revenue is around 6166.3 dollars

What percentage of orders take more than 60 minutes to get delivered from the time the order is placed considering the company wants to analyze the total time required to deliver the food.

Ans: Percentage of orders with more than 60 minutes of total delivery time is 10.54%

The company wants to analyze the delivery time of the orders on weekdays and weekends. How does the mean delivery time vary during weekdays and weekends?

Ans: The mean delivery time on weekdays is around 28 minutes
The mean delivery time on weekends is around 22 minutes

Key findings/Conclusions:

- The average food preparation time is 27 minutes, with a minimum of 20 minutes and a maximum of 35 minutes. Delivery times show a similar pattern, with an average of 25 minutes, a minimum of 15 minutes, and a maximum of 33 minutes. About 38.9% of orders have not been rated.
- Shake Shack tops the list of revenue-generating restaurants, followed by The Meatball Shop, Blue Ribbon Sushi, and Blue Ribbon Fried Chicken.
- There are 1,200 unique customers, and the dataset includes 178 unique restaurant names and 14 unique cuisine types. American, Japanese, and Italian cuisines are among the most popular, while Vietnamese, Spanish, and Korean cuisines have lower popularity.
- The majority of orders fall between \$11 and \$14, with the mean order cost at \$16.
- The dataset includes 1,351 orders placed on weekends and 547 orders placed on weekdays.
- Approximately 38.9% of orders are not rated. Among rated orders, rating 5 is the most common, followed by rating 4 and rating 3.
- The mean delivery time is 24.16 minutes, with orders typically delivered in 25 minutes. However, delivery times tend to vary, with some orders taking up to 33 minutes.
- The top three most frequent customers, eligible for 20% discount vouchers, have placed 13, 10, and 9 orders, respectively.

Business Recommendations:

- Customers tend to rate the delivery service lower when their delivery takes longer than expected.
Other factors that may influence the rating such as the quality of the food, packaging, and customer service
- Improving the food preparation time might improve the rating given for the service. Also, enhancing delivery efficiency and optimizing routes can improve customer satisfaction.
- Encourage more customers to provide ratings, which can provide valuable feedback for service improvement and enhance the overall customer experience.
- Utilize insights on popular cuisines such as American, Japanese, Italian, and Indian restaurants to design targeted promotional offers and advertisements.
- Offer promotions to top-rated restaurants such as The Meatball Shop, Blue Ribbon Fried Chicken, Shake Shack, and Blue Ribbon Sushi to drive customer engagement.

By implementing these recommendations, FoodHub can enhance customer satisfaction, drive business growth, and maintain a competitive edge in the online food delivery market.

Submitted by:
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