FoodHub Data Analysis

Data Science and Business Analytics

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Contents / Agenda

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

Executive Summary

- The food aggregator company has stored the data of the different orders made by the registered customers in their online portal. They want to analyze the data to get a fair idea about the demand of different restaurants which will help them in enhancing their customer experience.
- As a Data Scientist, we performed the data analysis to find answers to these questions that will help the company to improve the business model.
- More than 700 customers did not give a review for their order and most the customers who gave a review gave a 5 or 4 rating.
- The restaurant with an average higher review have more orders like Shake Shack, The Meatball Shop, Blue Ribbon Sushi and Blue Ribbon Fried Chicken. Also, the costumers with the rating is 5 or 4 are the one who put mostly a rating. So it is possible that mostly the very satisfied customers are the one rating the service. Maybe we should dig on the 'no rating customers' to see why they are not putting a rating. Is that they are unsatisfied or not.
- The preparation time is relatively consistent compared to the delivery time, meaning that the delivery time is the significant variable in total preparation time (total time between order and delivery to customer).
- The average cost of orders is higher with the customers rating 5 and 4 whereas the delivery time of customer rating 3 is high compare the others.

Recommendations:

1. The company should focus on customer satisfaction because more than 700 customers did not give a rating and if we have more rating that may change the distribution we have and help also improve some aspect of the service. So can come up with something to push customers to give a rating, for example a promotional offers or discount.
2. The company should try to improve on total order time by improving the delivery time. Also a high delivery time may be reason on certain review and the low orders during weekdays, We know weekdays we have traffic, so further analysis a necessary to see how can we do to improve the delivery.
3. To increase the Revenue, we should drawn a target segment market and differentiate the area where we have a higher concentration of students and a higher concentration of professionals. And depend of the demographic area we can launch specific marketing program. Further analysis of the customers demographics is needed for that,
4. A better marketing can be created to boost the orders for example a reward program. Also a discount program for least popular cuisines,.

Business Problem Overview and Solution Approach

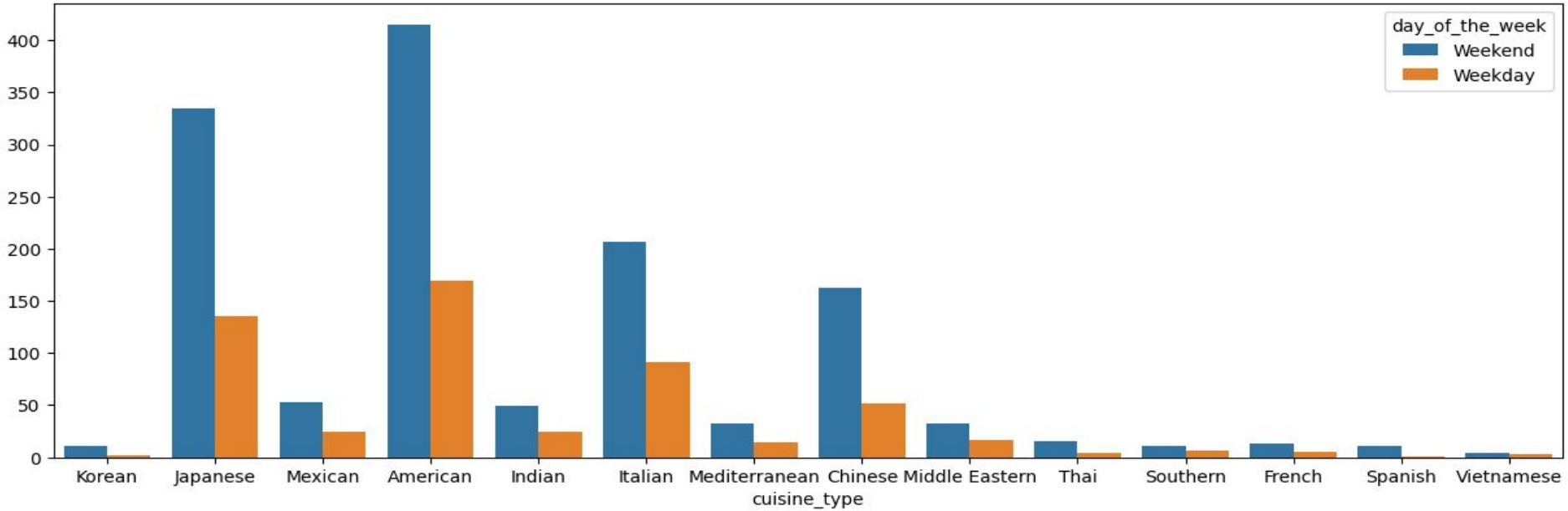
- The food aggregator company has stored the data of the different orders made by the registered customers in their online portal. They want to analyze the data to get a fair idea about the demand of different restaurants which will help them in enhancing their customer experience.
- As a Data Scientist, we will perform the data analysis to find answers to these questions that will help the company to improve the business model.

Data Overview

- *We will work on data set with 1898 rows and 9 columns.*
- *There are no missing values so no need to do any treatment for missing values*
- *We can observe that the average cost of orders is around 16.49, and 50% of orders is 14.14 and below. 75% of orders cost more than $22 and the maximum cost of order is around 35.*
- *Most of orders are placed on the weekend*
- *Most customers did not submit a review,*
- *The average and median food preparation time are almost the same around 27mn but we have small difference for the median and the average delivery time which are 25mn and 24mn.*
- *As we can see 736 of the rating are not giving. And most of given rating are rating 5, 588 are rating 5.*

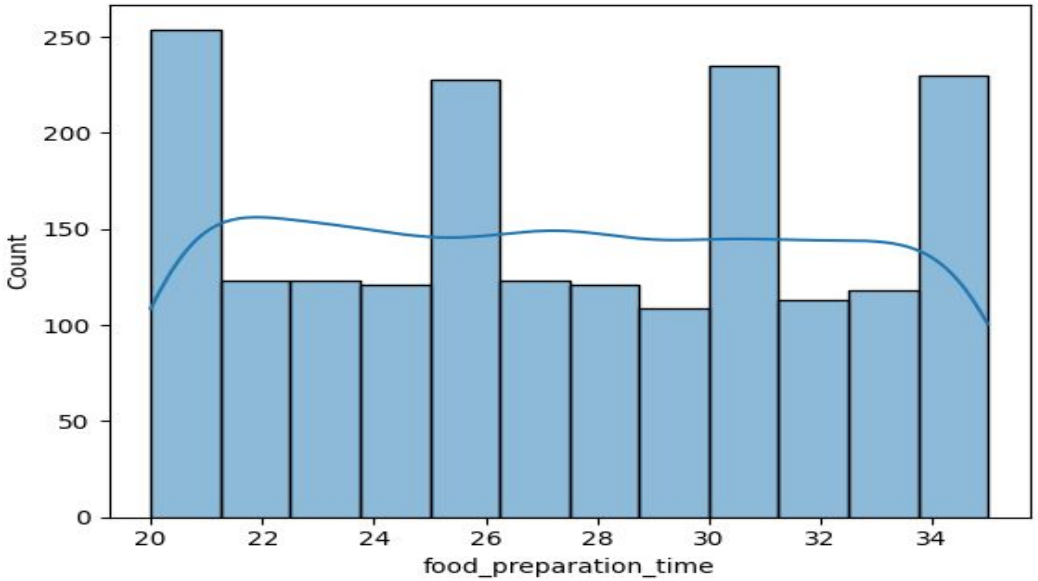
Univariate Analysis

- *We have 178 restaurants present in the system*
- *We have 14 differents type of menu*
- *Customers order most of the time American, Japanese, Italian and Chinese food, and on the weekend.*

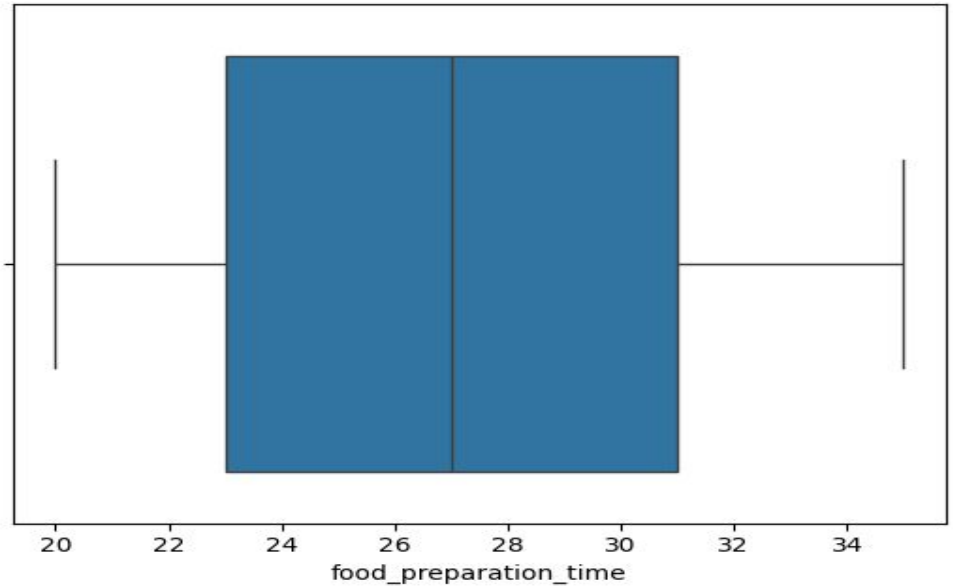


Food Preparation time

We can observe a fairly even distribution of the time it takes to prepare the dish between 20 minutes and 36 minutes and median around 27 minutes.

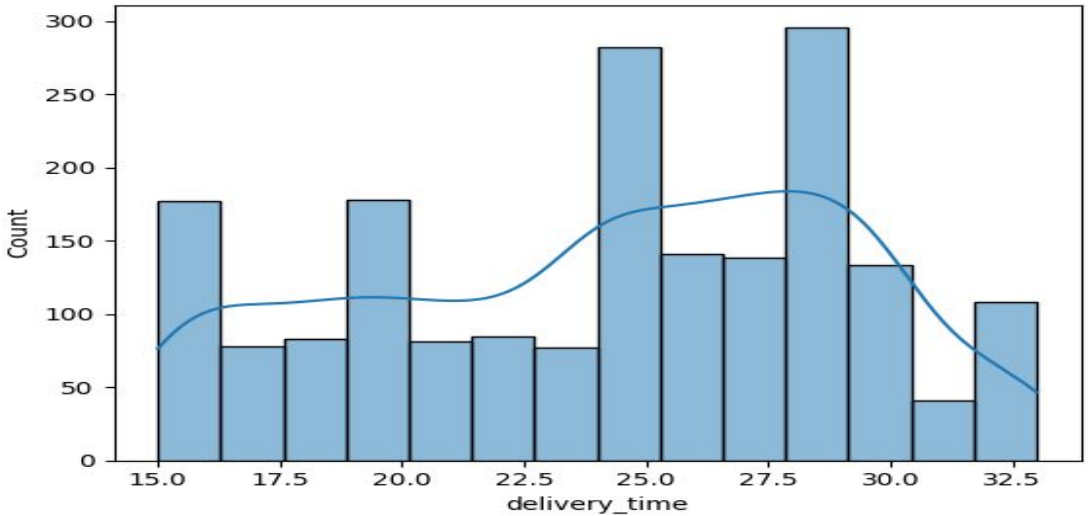


Box plot of the food preparation time

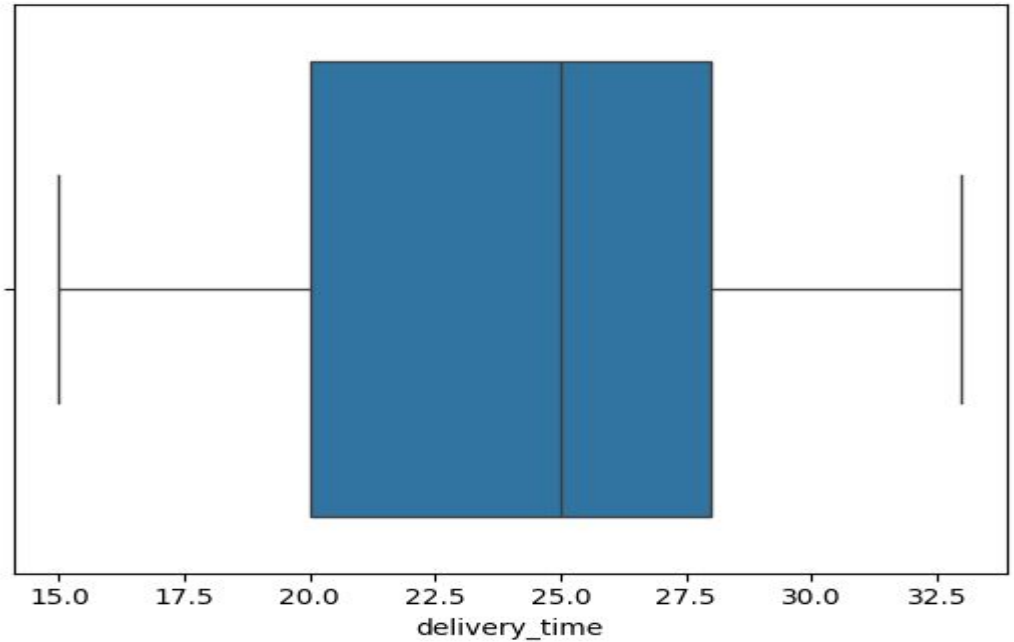


Delivery time

- *We can observe that the distribution is left skewed and the median delivery time is about 25 minutes.*
- *From the histplot we can determine that most orders take between 25 and 28 minutes to be delivered.*



Box plot of the delivery time



The top 5 restaurant in term of number of orders

- *Shake Shack with 219 orders*
- *The Meatball Shop with 132 orders*
- *Blue Ribbon Sushi with 119 orders*
- *Blue Ribbon Fried Chicken with 96 orders*
- *Parm with 68 orders*

Most popular cuisine on weekend

- *American Cuisine Type is the most popular during the weekends with a count of 415 orders.*

percentage of the orders cost more than 20 dollars & the mean order delivery time

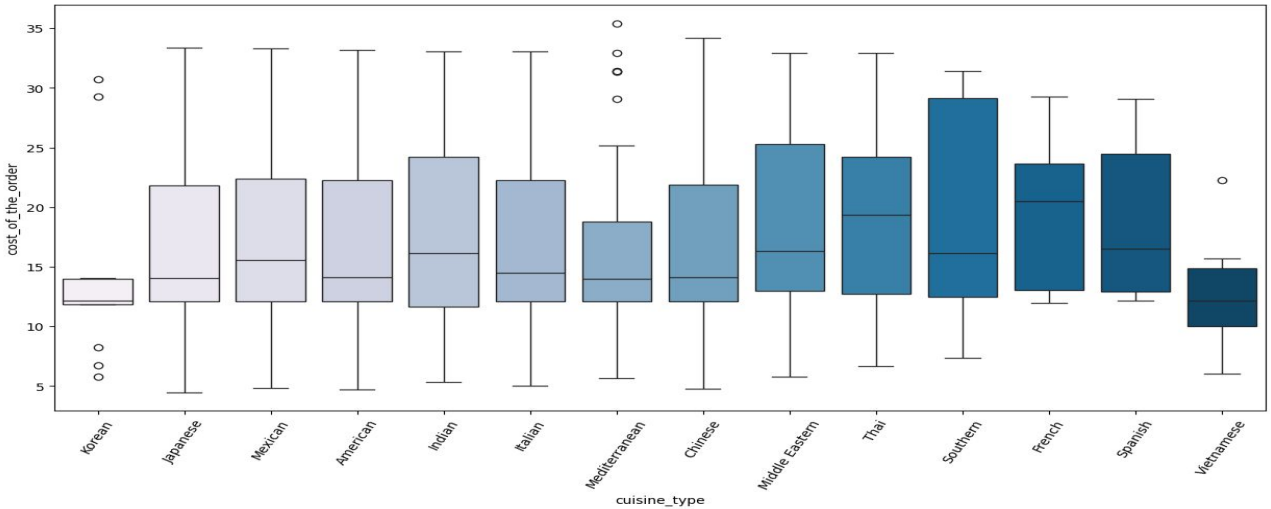
- *The number of total orders that cost above 20 dollars is: 555.*
- *Percentage of orders above 20 dollars: 29.24 %.*
- *The average delivery time for this dataset is 24.16 minutes*

The company has decided to give 20% discount vouchers to the top 3 most frequent customers.

- *customer with id number 52832*
- *customer with id number 47440*
- *customer with id number 83287*

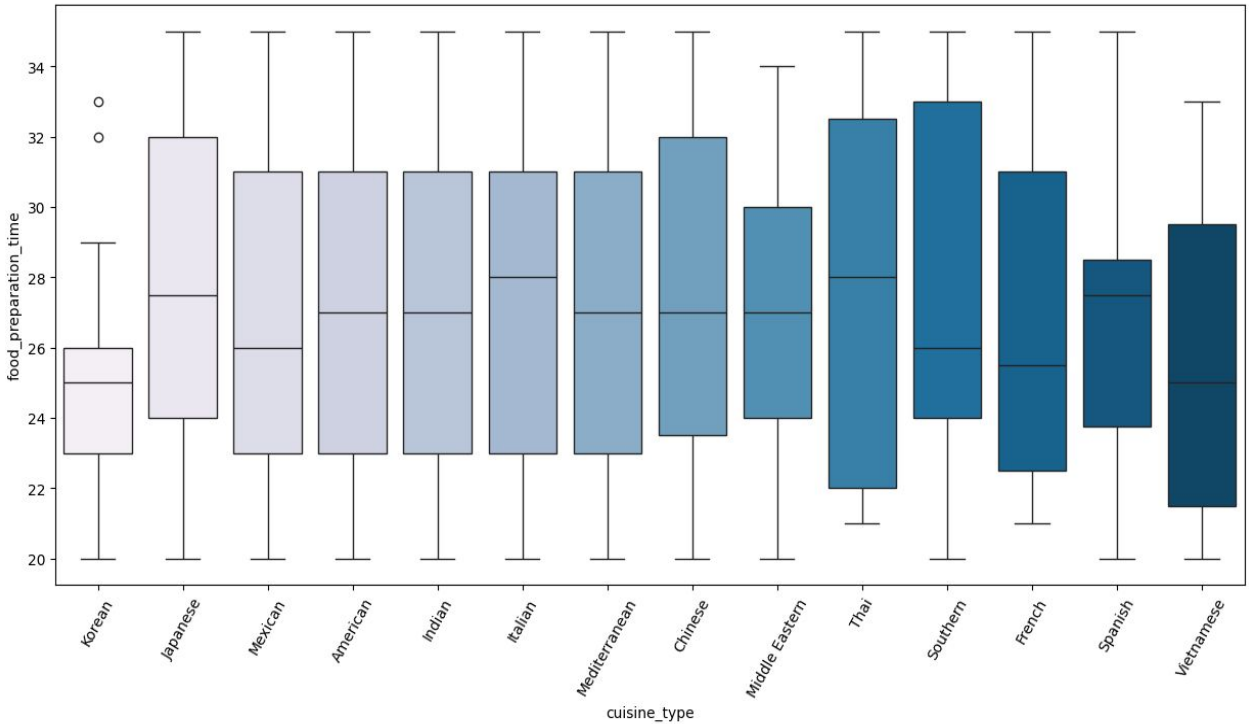
Multivariate Analysis

- The *median cost of order for the differents cuisines type vary between 13 to 17 dollard with a few having outliers such as Korean, Mediterranean and Vietnamese cuisines.*



Relationship between food preparation time and cuisine type

- *Most cuisine types have more or less the same average preparation time.*



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# Relationship between day of the week and delivery time
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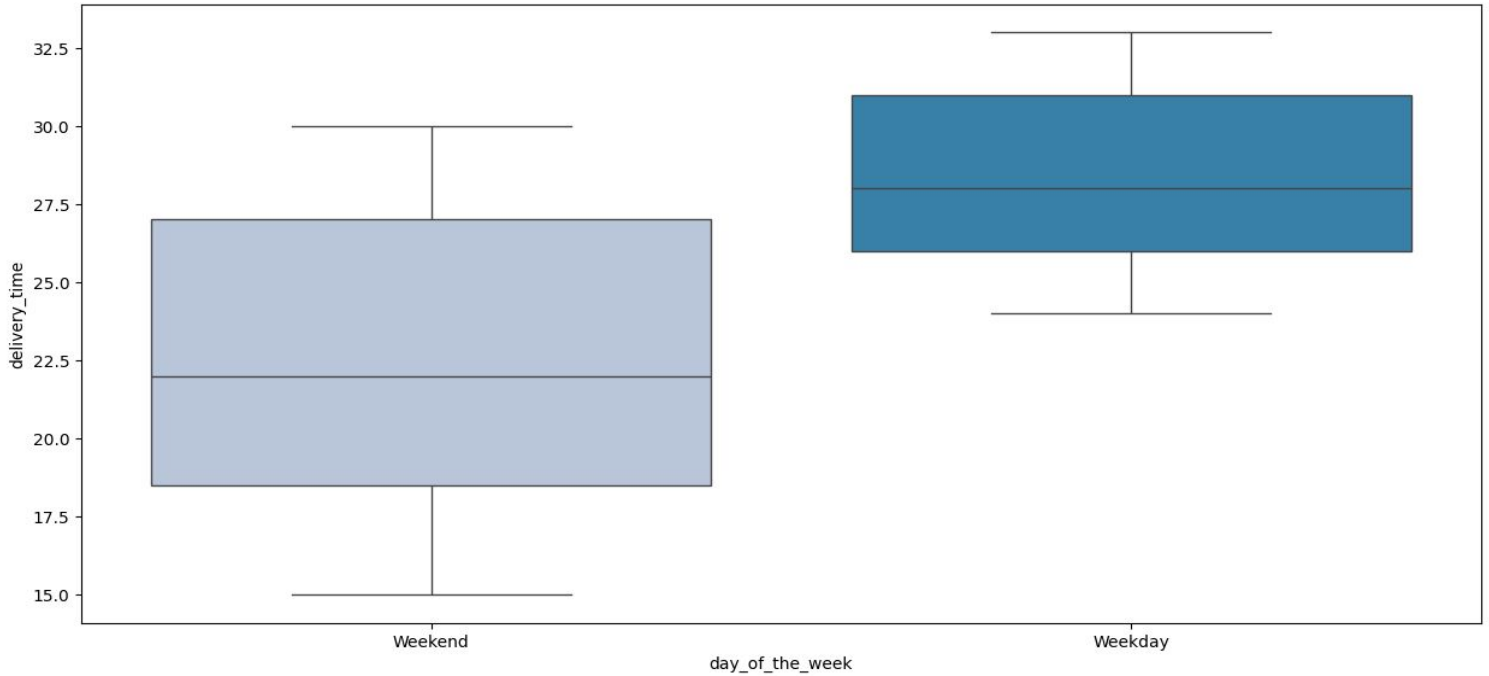
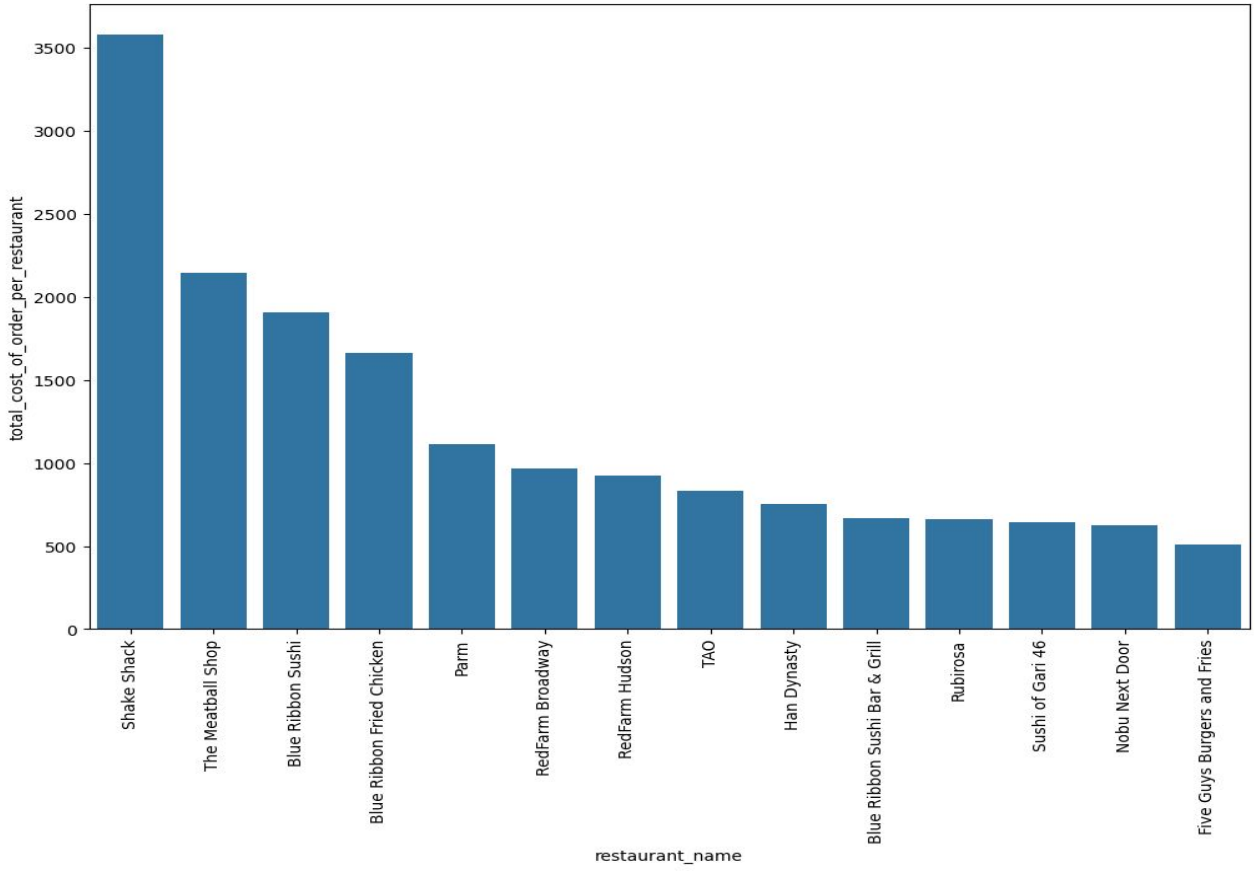
- *The delivery time on weekend is shorter than the week day with a median of around 22 minutes on weekend and 27 minutes of week day.*



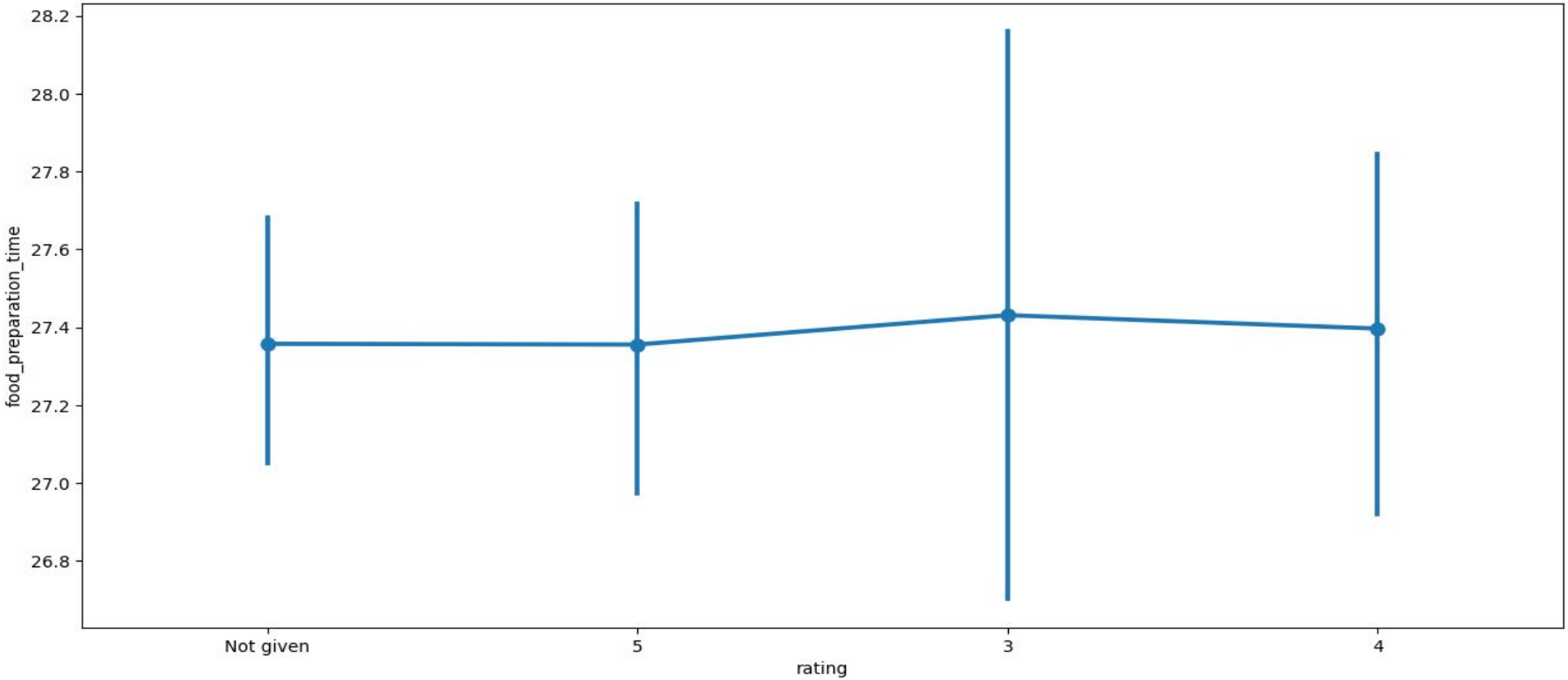
Revenue generated by each restaurant.



As we can see 5 restaurants more than $1000 revenu

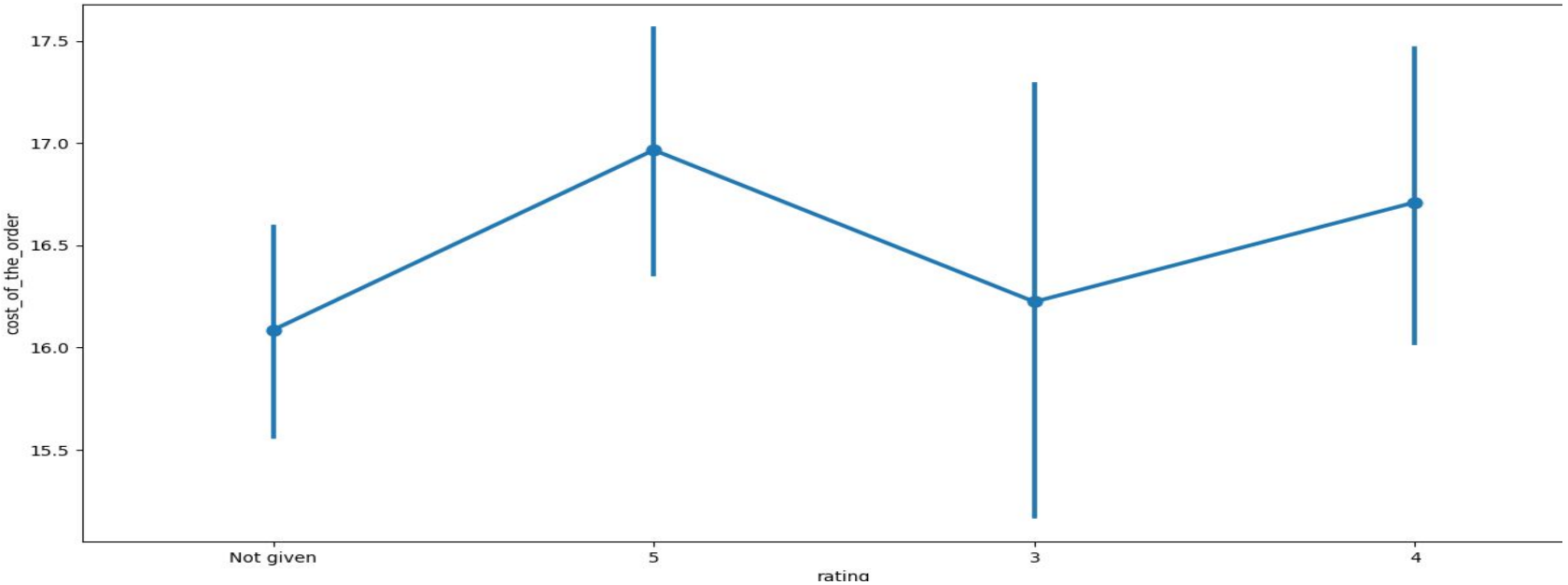
- *Shake Shack with more than $3500*
- *The Meatball Shop with more than $2000*
- *Blue Ribbon Sushi with around $2000*
- *Blue Ribbon Fried Chicken around $1700*
- *Parm more than $1000*
- *The rest of the restaurant make less than $1000*

Rating vs Food preparation time



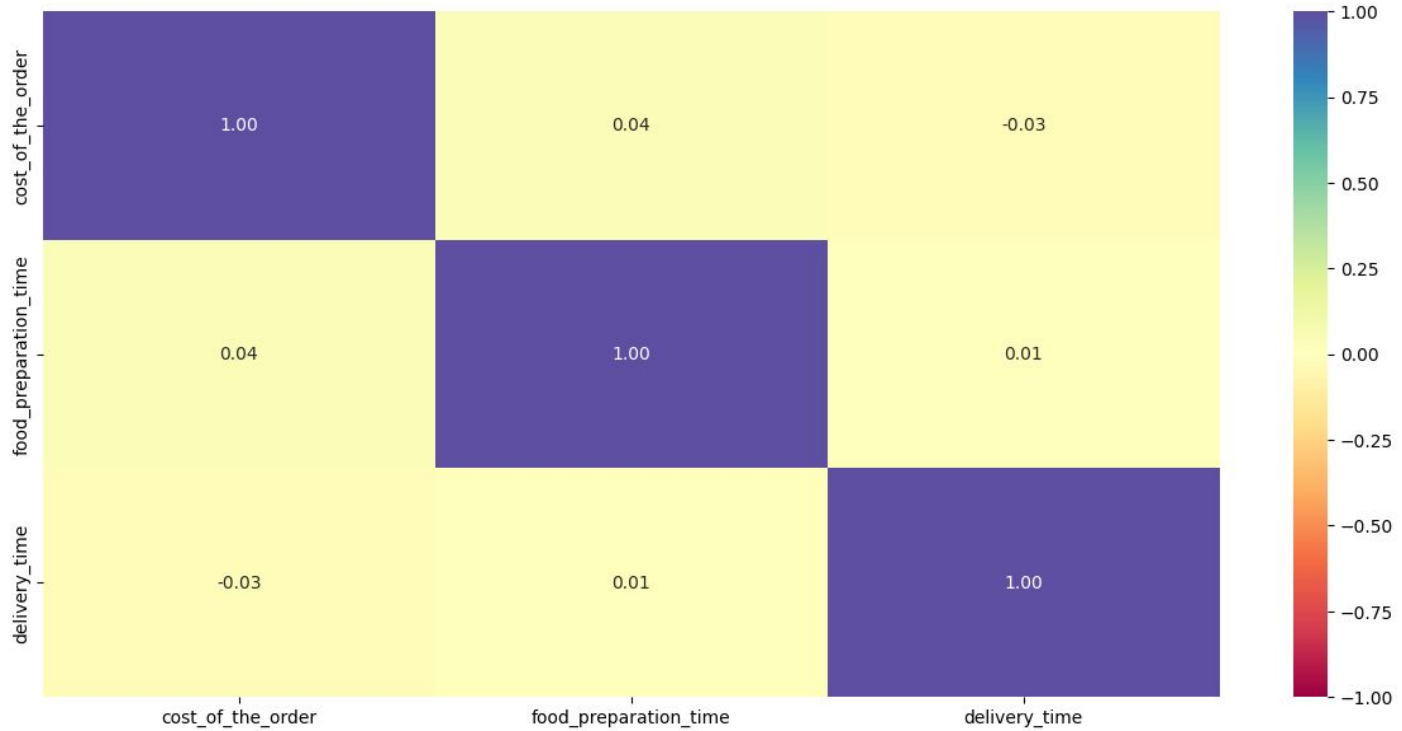
Relationship between rating and cost of the order

- *The cost of orders is higher with the customers rating 5 and 4*



Plot the heatmap

- *The heatmap shows very weak correlation between the cost of order, the delivery time and the preparation time.*



The company wants to provide a promotional offer in the advertisement of the restaurants. The condition to get the offer is that the restaurants must have a rating count of more than 50 and the average rating should be greater than 4.

	restaurant_name	rating
0	Shake Shack	133
1	The Meatball Shop	84
2	Blue Ribbon Sushi	73
3	Blue Ribbon Fried Chicken	64
4	RedFarm Broadway	41
5	Parm	39
6	RedFarm Hudson	34
7	TAO	28
8	Rubirosa	24
9	Nobu Next Door	23
10	Han Dynasty	23
11	Momoya	22
12	Blue Ribbon Sushi Bar & Grill	22
13	Tamarind TriBeCa	20

The top 5 restaurants with a rating greater than 4

	restaurant_name	rating
0	The Meatball Shop	4.51
1	Blue Ribbon Fried Chicken	4.33
2	Shake Shack	4.28
3	Blue Ribbon Sushi	4.22

the net revenue generated by the company across all orders.

The company charges the restaurant 25% on the orders having cost greater than 20 dollars and 15% on the orders having cost greater than 5 dollars

- *The total revenue of the company is **$6166.3**.*

APPENDIX

Link to google colab project foodHub:
https://drive.google.com/file/d/1TJbbjKFjjt81VDF43mR8QHnO9UfKVHci/view?usp=sharing

Great Learning

Happy Learning !