FoodHub Case Study

FoodHub Data Analysis

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A food aggregator company FoodHub offers access to multiple restaurants through a single smartphone app

The food aggregator earns money by collecting a fixed margin of the delivery order from the restaurants.

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Executive Summary

FoodHub is a food aggregator company that offers access to multiple restaurants through a single smartphone app. The food is picked up from the restaurants and delivered to the customers.

The company has stored data of the different orders made by registered customers in their online portal. As a Data Scientist, I perform the data analysis and, on that basis, I would like to give the below recommendations:

- Judging by the number of orders, it appears that American style cuisine is the most popular among the customers, followed by Japanese, Italian, and Chinese. Therefore, my recommendation would be to increase the number of these restaurants in their portfolio.
- Also, I observed that most of the orders placed were costing between 10 to 20 dollars, so, including restaurants in which average price is in the above range may lead to an increased number of orders.

Executive Summary

- Through rating (feedback) we get our performance review from the customers about the food quality, quantity, taste etc. and the total time of delivery, behavior of our staff. From this data we can see that above 700 customers have not given any rating, and we should make sure that we get more and more customer ratings.
- Generally, we relax or wind our incomplete personal work on weekends and thus more order received on weekends than weekdays. Increasing employees on weekends is a good idea to do cost effective business.

Business Problem Overview and Solution Approach

Potential Problems

- Ratings
- Promotional offers
- Delivery time on weekdays is higher than on weekends
- Comparatively 3star rating takes more time to deliver food

Solution Approach / Methodology

- Univariate analysis
- Multivariate analysis

Data Overview

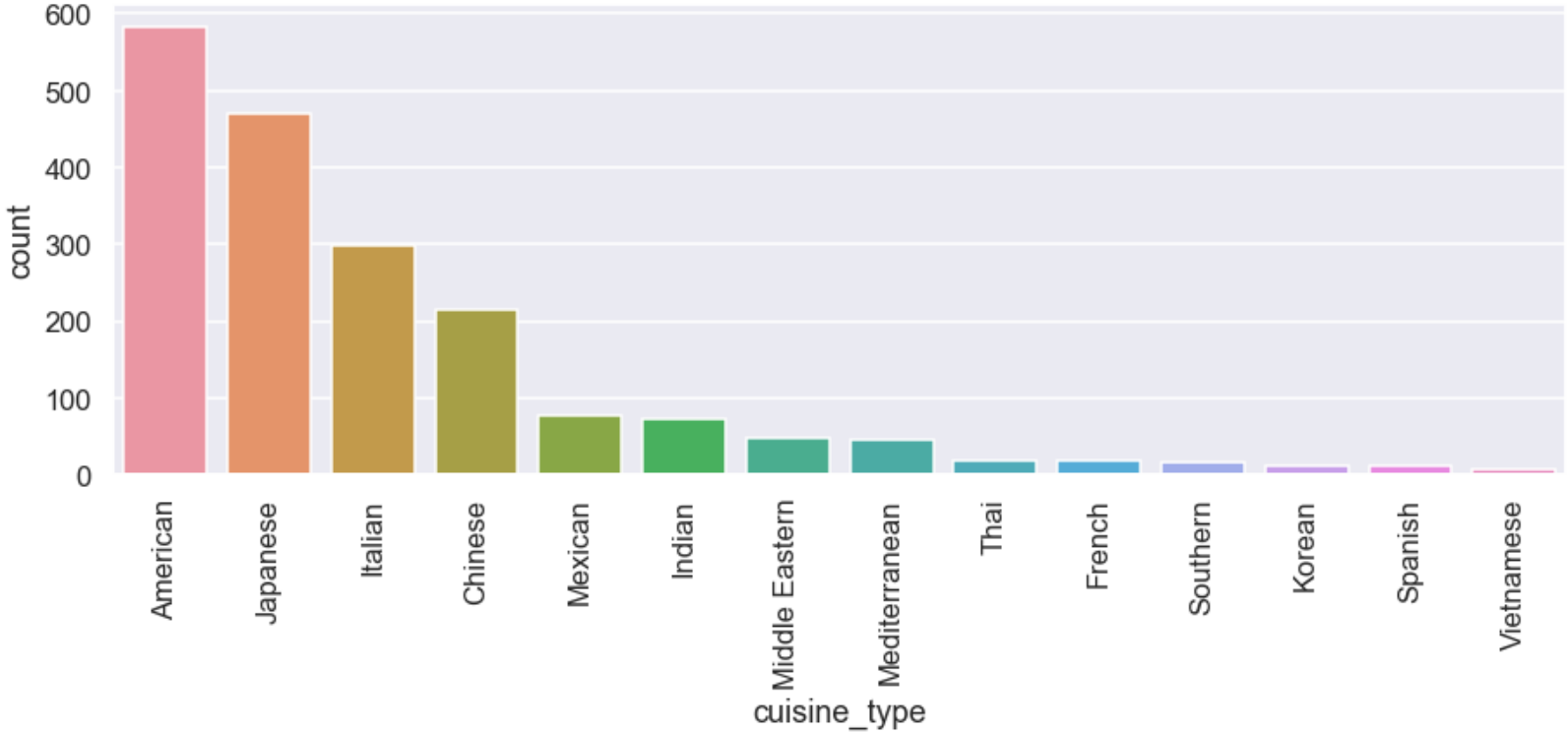
	order_id	customer_id	restaurant_name	cuisine_type	cost_of_the_order	day_of_the_week	rating	food_preparation_time	delivery_time
0	1477147	337525	Hangawi	Korean	30.75	Weekend	Not given	25	20
1	1477685	358141	Blue Ribbon Sushi Izakaya	Japanese	12.08	Weekend	Not given	25	23
2	1477070	66393	Cafe Habana	Mexican	12.23	Weekday	5	23	28
3	1477334	106968	Blue Ribbon Fried Chicken	American	29.20	Weekend	3	25	15
4	1478249	76942	Dirty Bird to Go	American	11.59	Weekday	4	25	24

- This Foodhub dataset contains 1898 rows each row corresponds to one customer and 9 columns of different observations, of which we have four int64, four object and one float64 type values. There are no missing values in the dataset.
- Of the 1898 total order, 736 were not rated by the customers.

Exploratory Data Analysis

- After filtering the data, we have found 1200 different customer id's, 178 different restaurant names and 14 cuisine type.
- The top 5 restaurants with highest number of orders are 'Shake Shack', 'The Meatball Shop', 'Blue Ribbon Sushi', 'Blue Ribbon Fried Chicken', 'Parm'. Also, we see that American is the most popular cuisine.
- Out of 1898 orders 555 orders were priced at above 20 dollars which is 29.24%.
- Also, we have customer id's who ordered most frequently for our records so that we can offer discount offers to retain those customers for future.

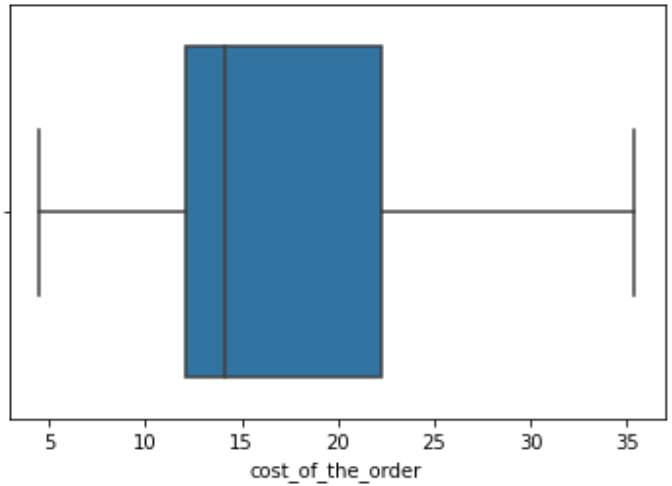
Exploratory Data Analysis

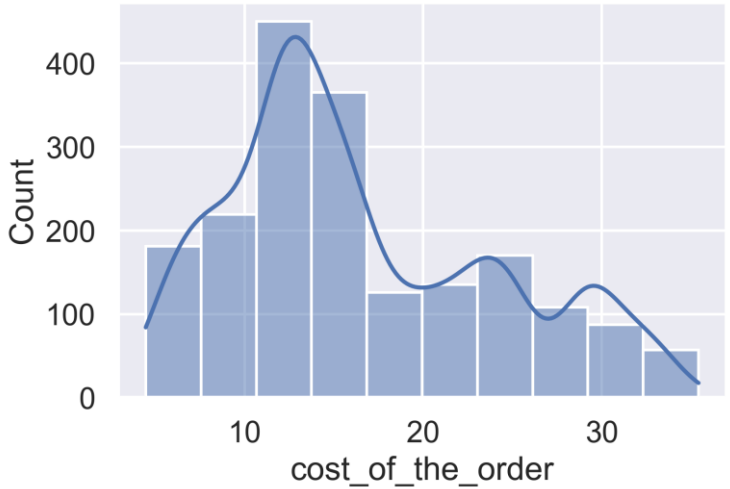


- Looking at the above graph we can see that the top five most popular cuisine types among customers are American, Japanese, Italian, Chinese and Mexican.

Exploratory Data Analysis

Cost of the order

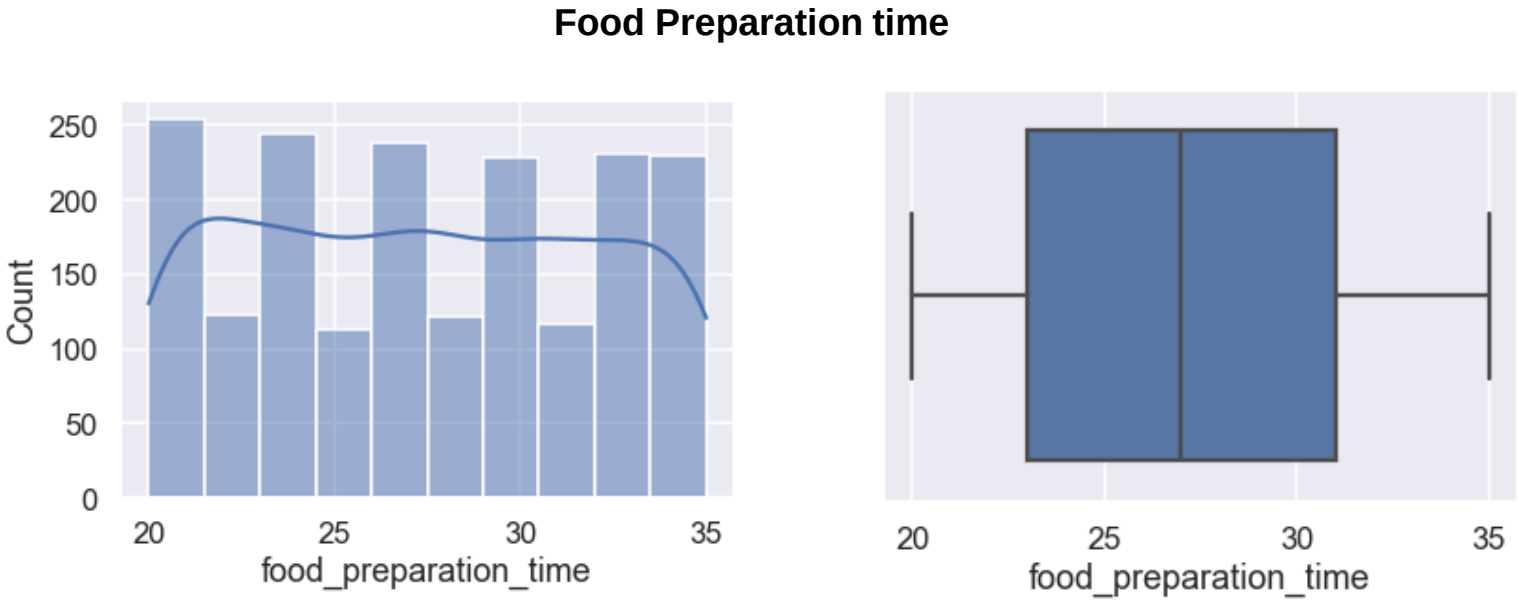




- The histogram and the boxplot for cost of the order shows that 50% of orders were placed between 10 to 20 dollars.

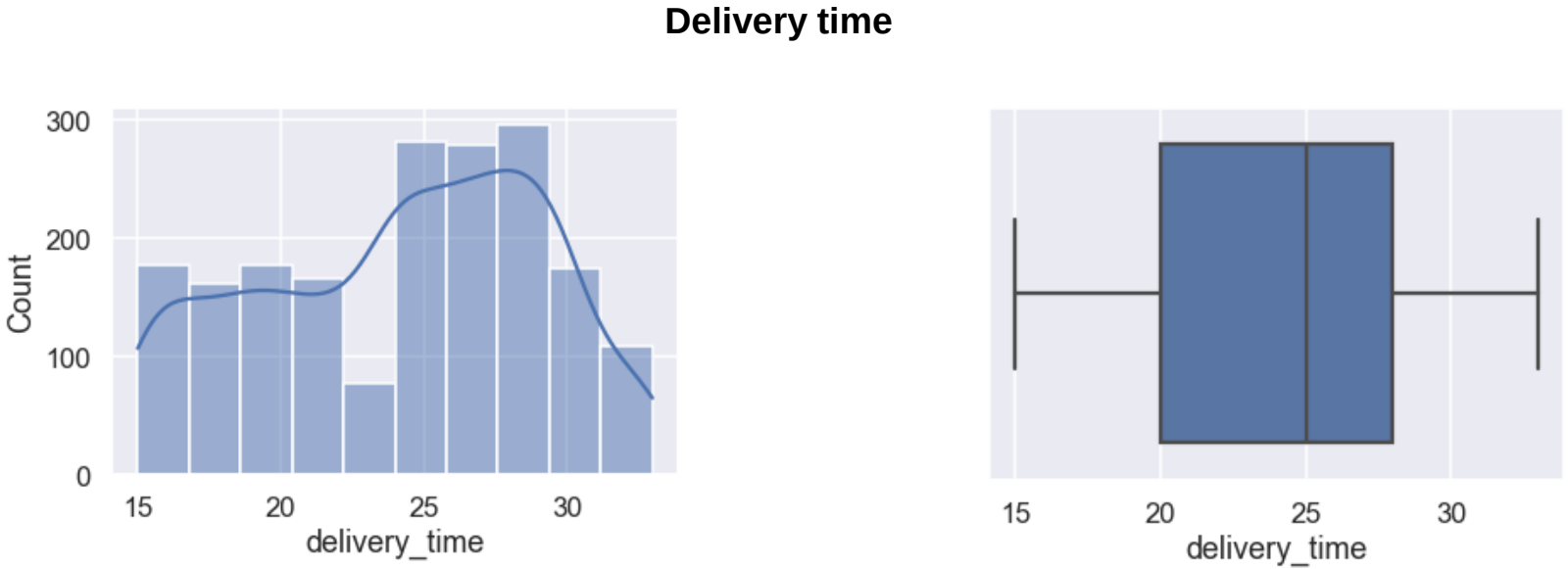
- The histplot shows more towards lower costs, however we note that there is a slight peak at around 15 dollars. The boxplot indicates that the median cost is about 14 dollars, with the orders being right skewed. This implies a bigger spread above the median.

Exploratory Data Analysis



- There is an even distribution of the time it takes to prepare the dish between 20 minutes and 36 minutes with a median of about 27 minutes

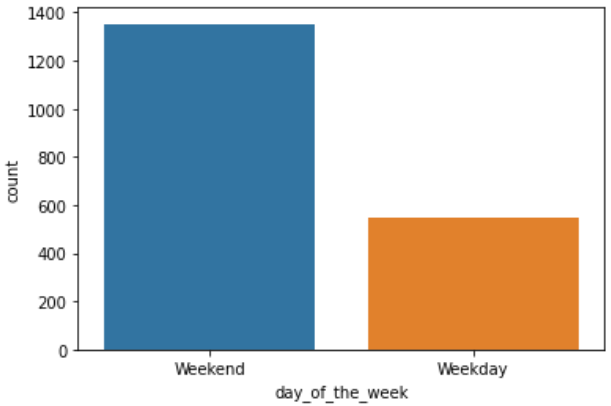
Exploratory Data Analysis



- The median delivery time is about 25 minutes with the observations being skewed to the left. From the histplot we can determine that most orders take between 25 and 28 minutes to be delivered.

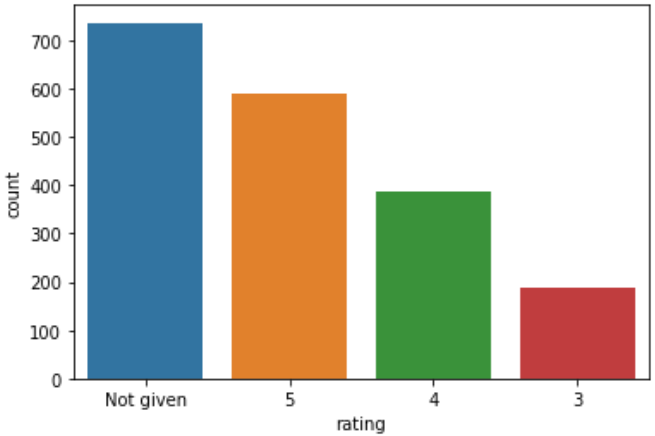
Exploratory Data Analysis

Day of the week



- There is higher activity over the weekend than during the other weekdays.

Rating



- The above demonstrates that more than 700 customers have not rated their experience. Out of the customers who did, most rated 5 stars for their experience.

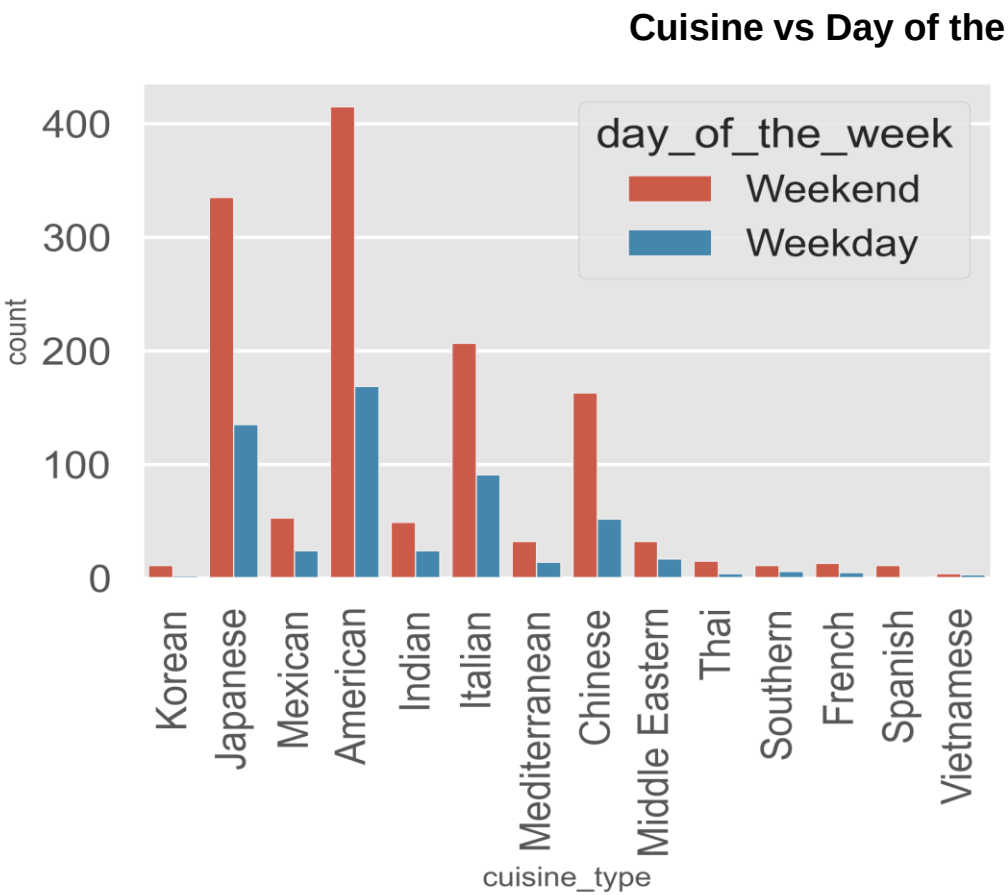
Exploratory Data Analysis

Below is the list of restaurants that have rating count more than 50 and their average ratings.

	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

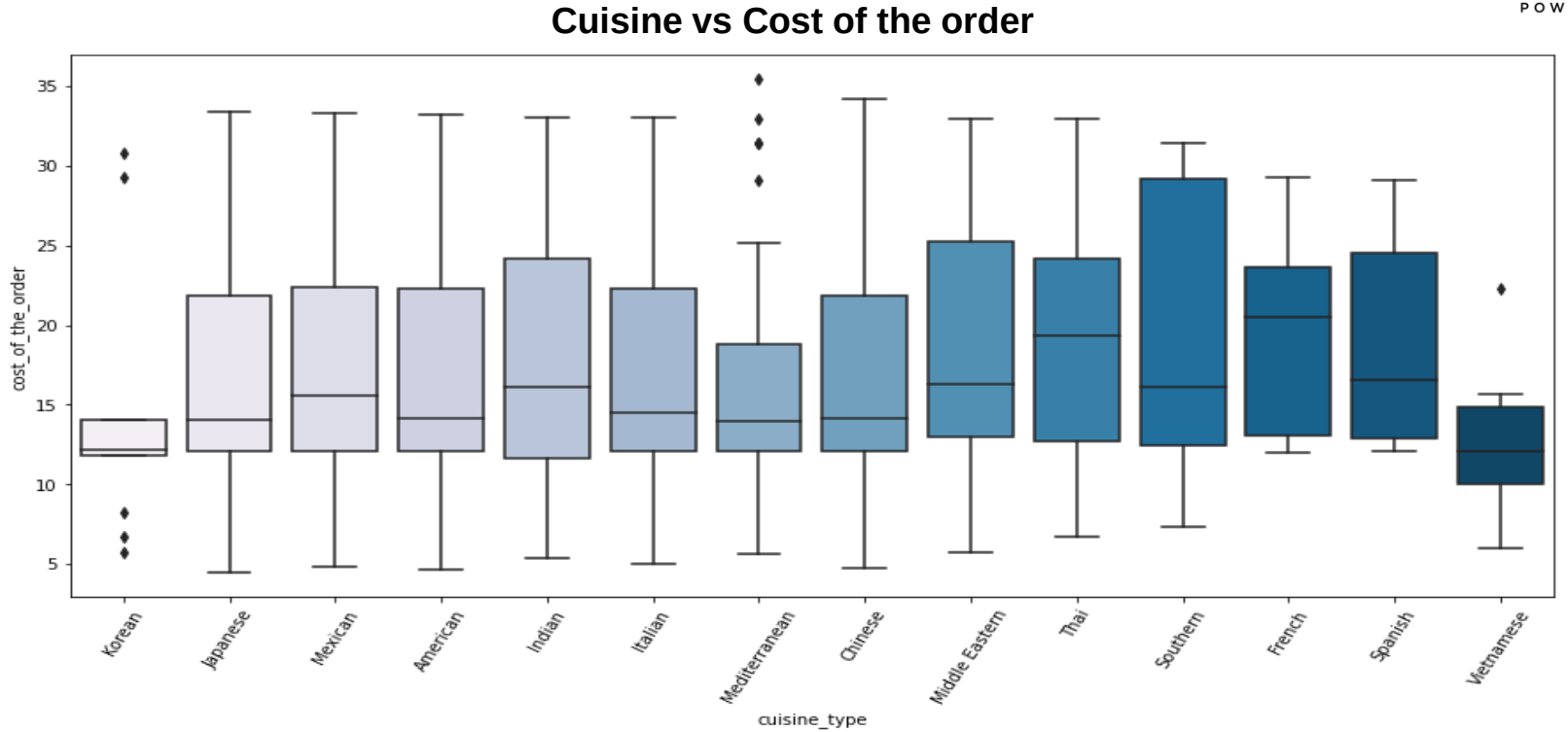
Revenue generated by the restaurants is in the same order as restaurants with highest number of orders received. The company charges the restaurant 25% on the orders having cost greater than 20 dollars and 15% on the orders having cost greater than 5 dollars so the net revenue generated by the company across all orders is around 6166.3 dollars.

Exploratory Data Analysis



- We note that the pattern of popularity of cuisine follow the same pattern irrespective of the day of the week. However, the demand is generally low during the weekdays

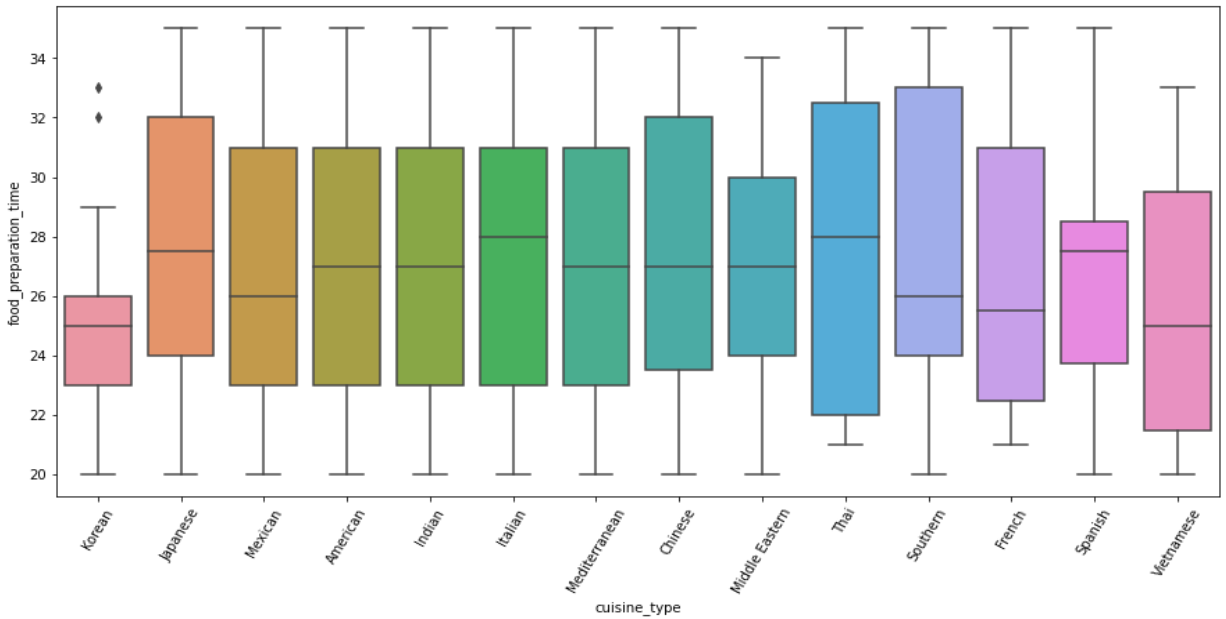
Exploratory Data Analysis



- The above figure indicates that French cuisine may be more expensive than others whereas Vietnamese cuisine is the least expensive.

Exploratory Data Analysis

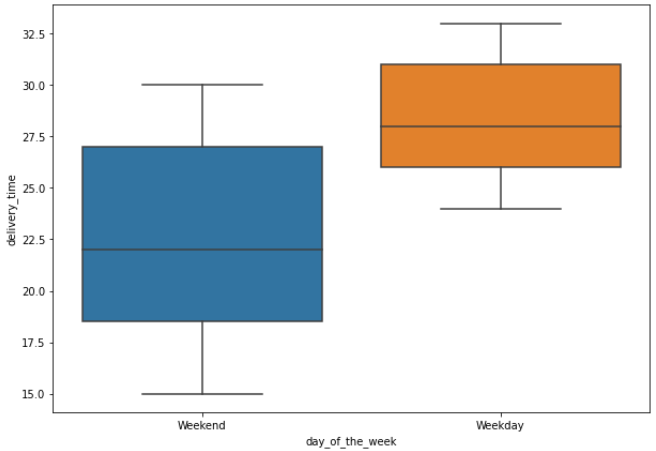
Cuisine vs Food Preparation time



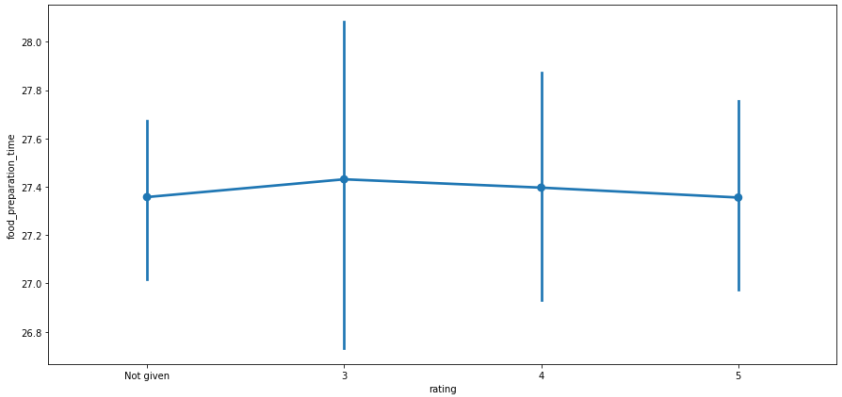
- There is no strong dependency of cost of food by cuisine type. There is an indication that Korean food is cheaper than others.

Exploratory Data Analysis

Day of the Week vs Delivery time



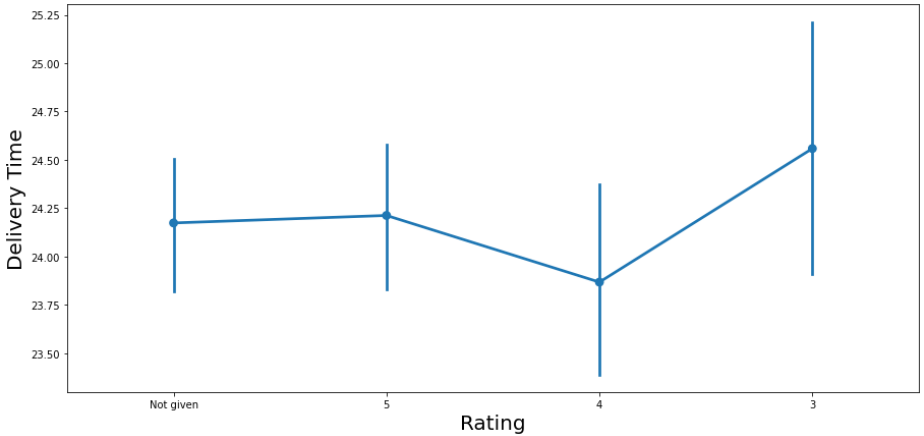
Rating vs Food preparation time



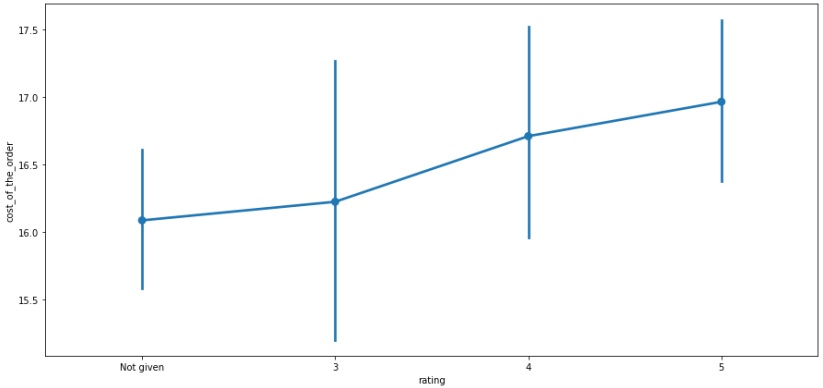
- We note a steady spread of observations irrespective of the day of the week, except for delivery time which generally takes longer during the weekdays than during the weekends. The median delivery time for weekends is around 22.5 minutes while that of the weekdays is about 28.5 minutes.
- Food preparation time has no impact on rating.

Exploratory Data Analysis

Rating vs Delivery time



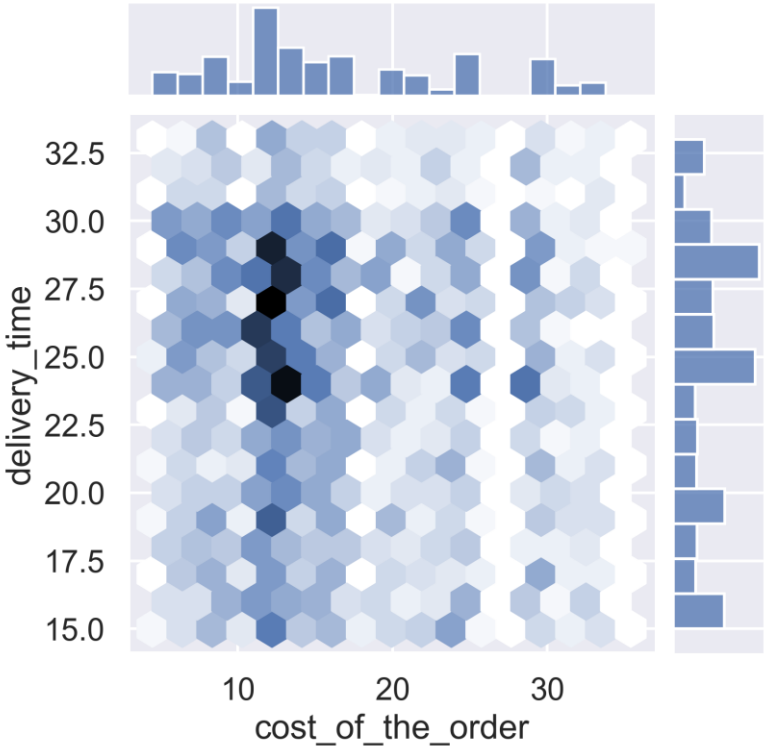
Rating vs Cost of the order



- 3 star rated restaurants take longest to deliver food
- 5 star restaurants are also the most expensive.
- From the above figures we can see that the delivery time is higher for 3 star rated orders and cost of order is comparatively low. So, by decreasing the delivery time it will be easier to increase the orders as the price is also low for those orders.

Exploratory Data Analysis

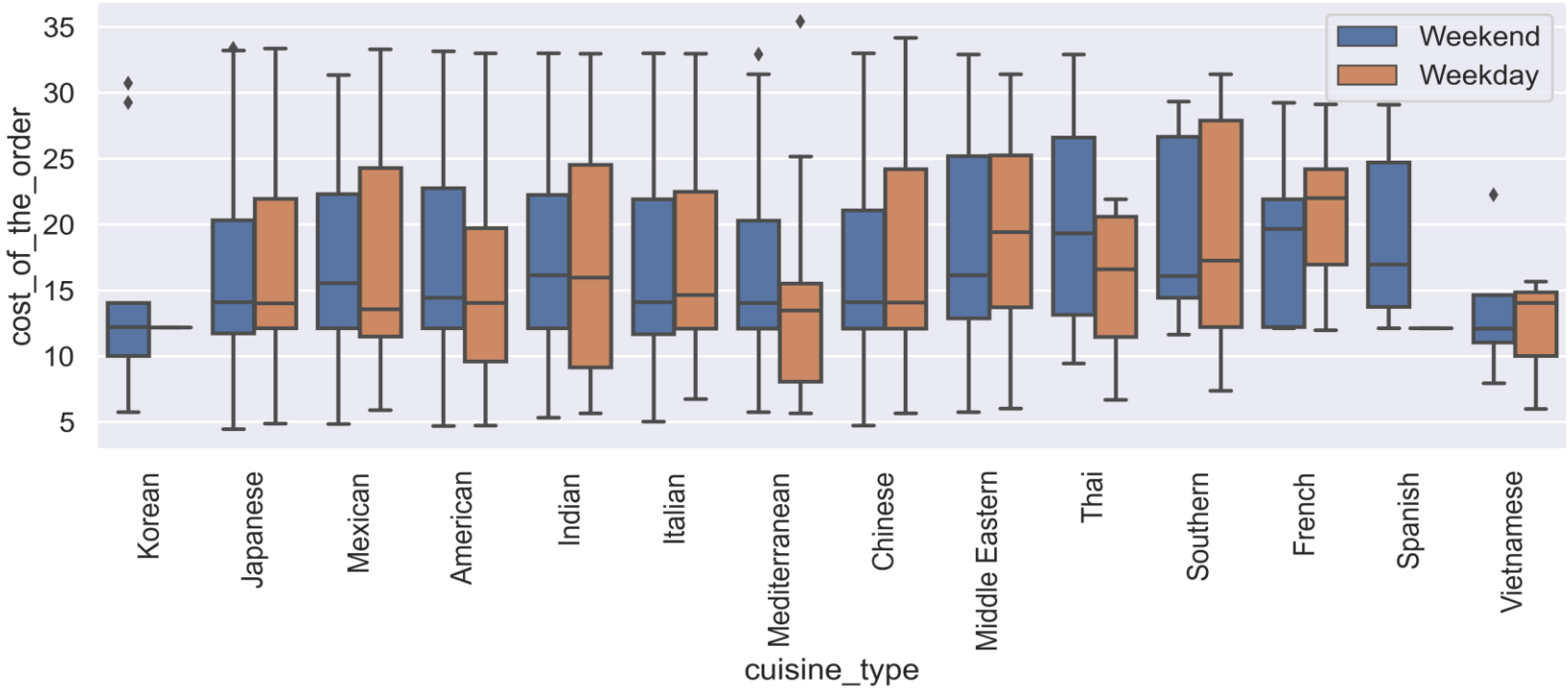
Cost of the order vs Delivery time



- Order costs are densely populated at about 11 USD within a range of about 24 - 30 minutes delivery time

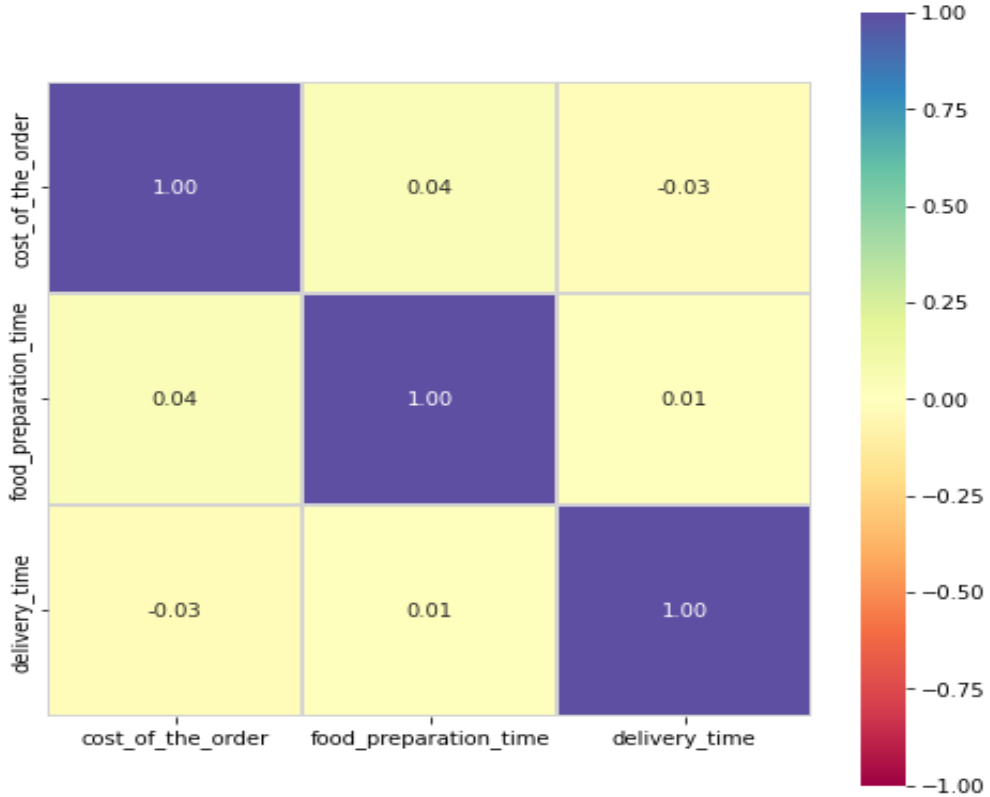
Exploratory Data Analysis

Cost of the order vs Cuisine type on Days of the week



- The cost of Spanish cuisine appears to be higher during weekends.

Exploratory Data Analysis



- There is no correlation between the variables.

Conclusions:

- With rating concentrated around the high score of 5, its possible that mostly its the very satisfied customers that bother to rate the service. However, a lot of data about (38%) is lost in the unrated orders. A curious question that would arise is whether the unrated orders would skew the rating in a different direction

- Whereas the cost of orders peak at around 13 dollars, there is a slight peak around 25 dollars as well making the observations bimodal

- There is a consistent popularity structure of the cuisines irrespective of the day of the week although demand is significantly higher over the weekends.

- Preparation time is relatively consistent as compared to delivery time, meaning delivery time is the significant variable in total preparation time (total time between order and delivery to customer).

Recommendations:

- FoodHub can consider increasing number of top-rated restaurants that offers the top-rated cuisine type that is American, Japanese, Italian, Chinese, Indian etc. to increasing the number of orders on FoodHub.

- Also, we observed that most of the orders placed were costing between 10 to 20 dollars, so to include restaurants in which average price of ranges between the above figures to increase more orders.

- Improve the customers' response rating their orders, that is, reduce the rating 'Not given' on the orders. If possible, entice them with a reward or follow up to know why they opt not to rate the service. This is so that better data can be available to determine customer satisfaction and enable service improvements

Recommendations:

- On promotional offers the organization will have to consider a tie-breaker for cases where customers have the same score.
- Given the consistent popularity of the cuisines across the days of the week, better marketing can be focused on the weekday to boost sales.
- To improve on total order time (the total time taken between the customer placing the order and receiving their delivery) a review on how to bring down delivery time can be assessed to improve on overall service.

Great Learning

Happy Learning !