Food Hub Analysis

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Project

The food aggregator company has stored the data of the different orders made by the registered customers in their online portal. We are going to analyze the data to get a fair idea about the demand of different restaurants which will help them in enhancing their customer experience.

- **The dataset contains information about the user ids, customer ids, cuisine type, restaurant name, cost of the order, preparation time and delivery time.**

About Data

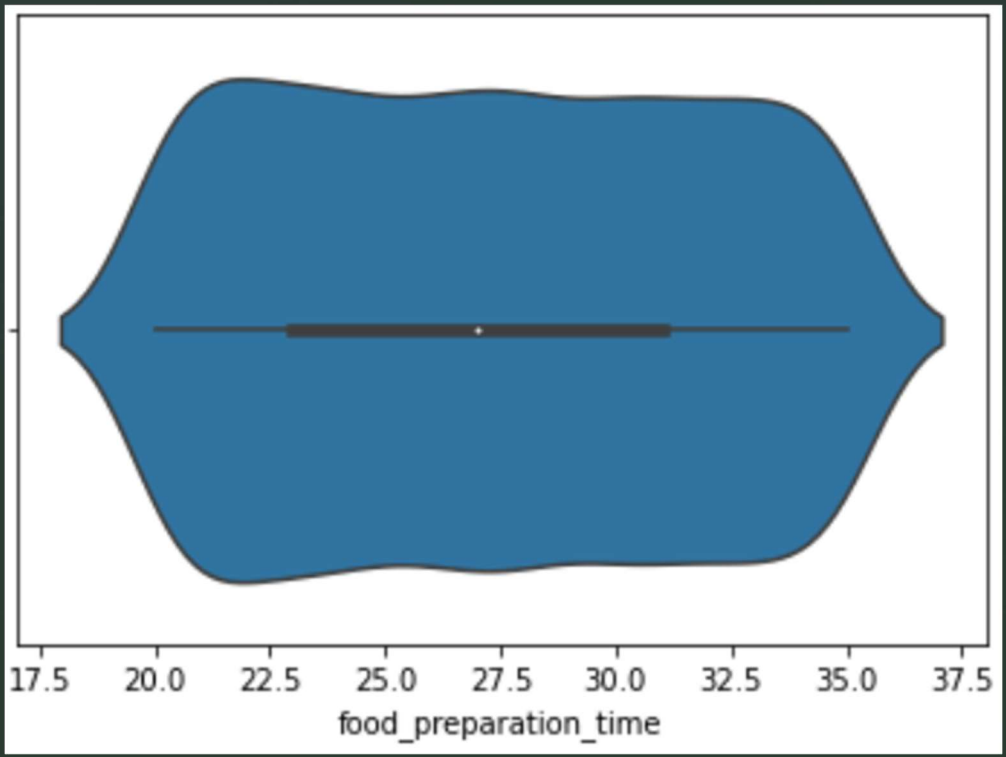
- The dataset contains 1898 rows and 9 columns.
- There are no missing values in dataset.
- restaurant_name, cuisine_type, day_of_the_week and rating are object data type.
- cost_of_the_order is of 'Float" data type.
- order_id, customer_id, food_preparation_time and delivery_time have numerical data type.

To make the data set usable, I cleansed dataset for these specific columns 'restaurant_name', 'cuisine_type' and 'day_of_the_week’ from object data type to category data type.

Data Summary

- There is huge difference between the maximum and the 3rd quartile value for the 'cost_of_the_order', 'food_preparation_time' and 'delivery_time' indicating positive skewness.
- The minimum order on the food('cost_of_the_order) is $4.47 dollars.
- It takes minimum of 20 minutes to prepare any kind of cuisine(food_preparation_time).
- The delivery time range from 15 minutes to 33 minutes.
- There are totally 4 kinds of ratings.
- 736 customers have not rated the restaurants for the order they placed.

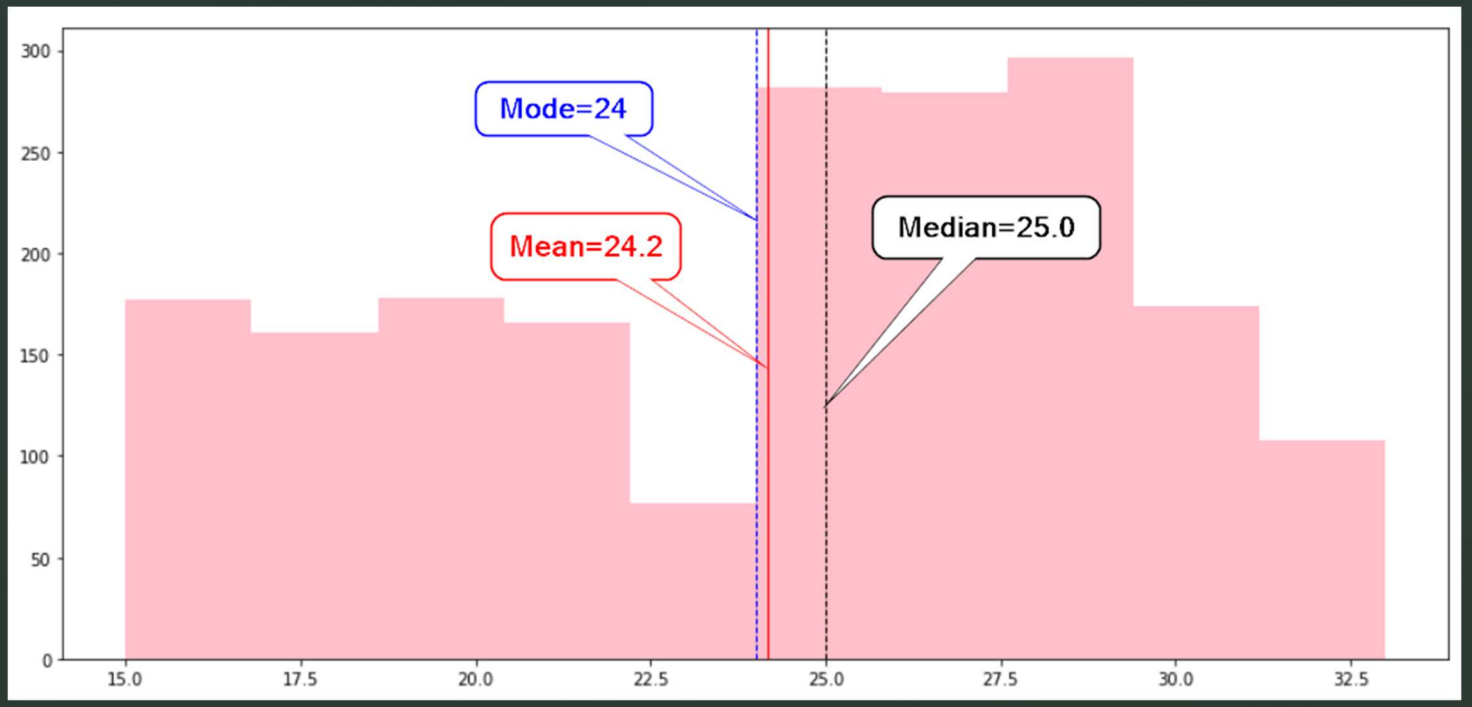
Exploratory Data Analysis



After performing the univariate analysis on food preparation time and observing the output plot, we can draw the following conclusion.

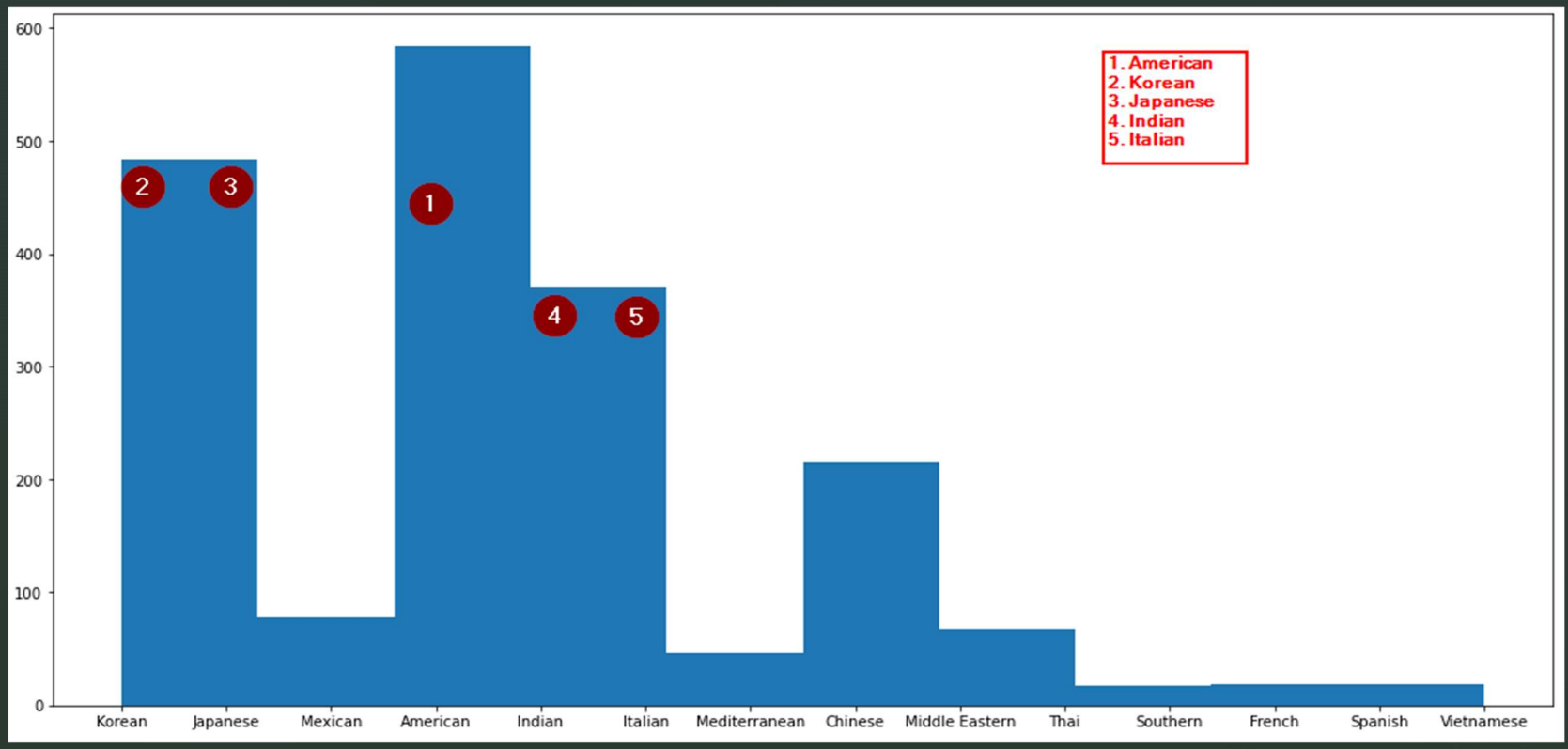
- There are no outliers in preparation time
- Preparation time range from 20 minutes to 35 minutes
- 50% of the order preparation time for all type of cuisines range from 23 minutes to 31 minutes

Delivery Time Analysis

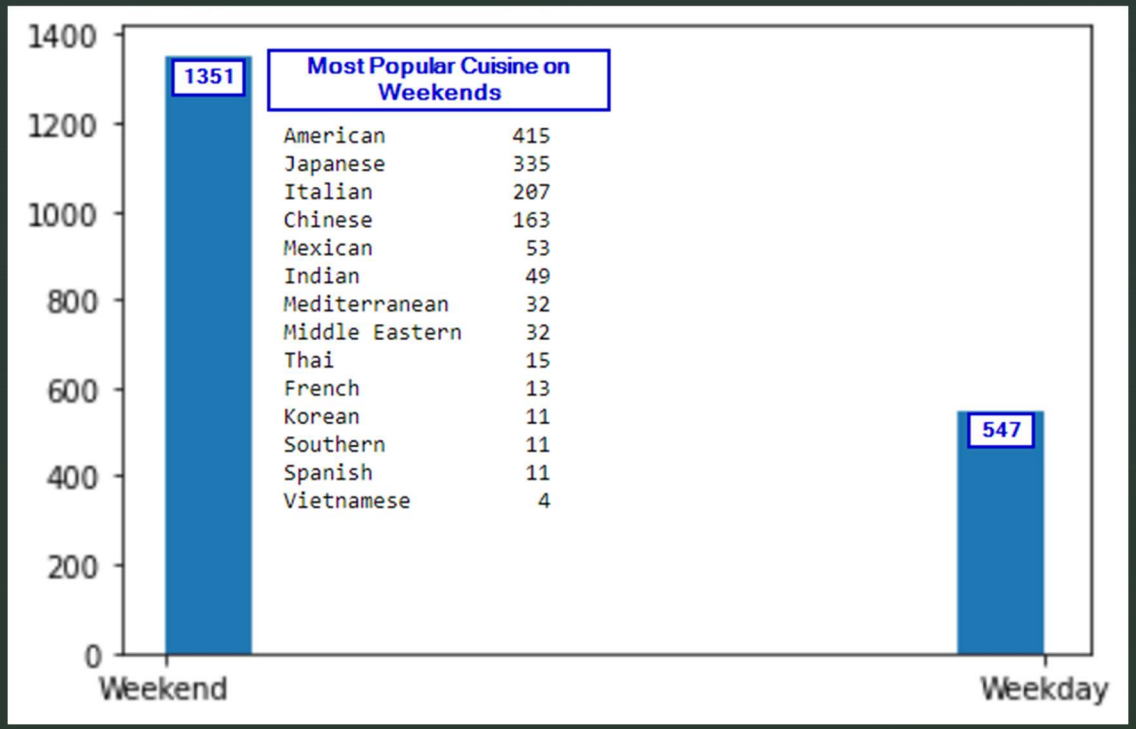


- The delivery time range from 15 minutes to 33 minutes.
- Most of the orders were delivered in 25 minutes after placing the order and the mean or average delivery time for all orders is 24 minutes.

Cuisine Type Analysis



Order Comparison



- Majority of the orders are placed on weekends and the most popular cuisine on weekends are shown above with American cuisine leading the list.

Top 5 Restaurants

The list of top 5 restaurants generating maximum number of orders are:

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

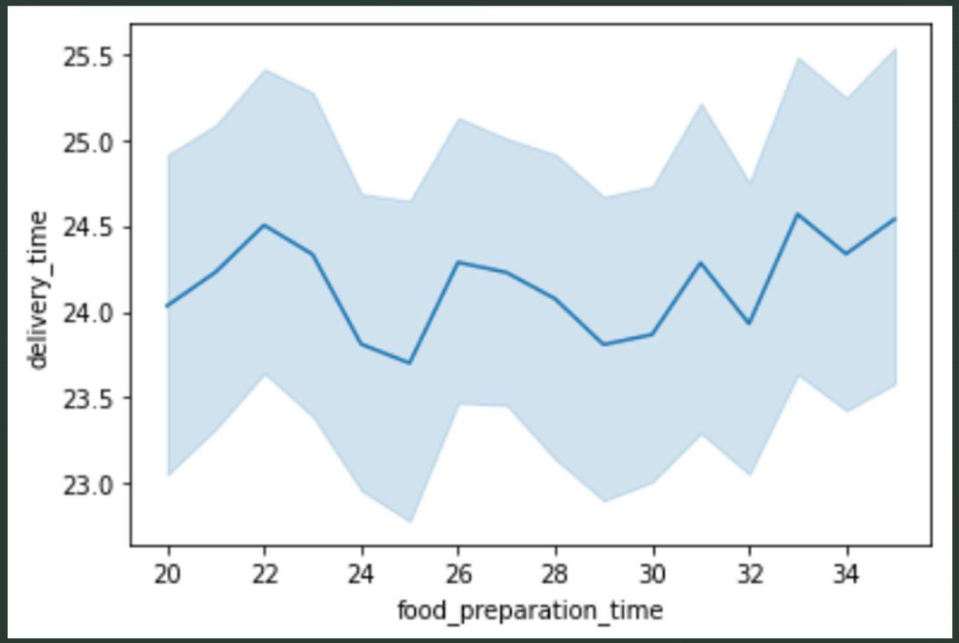
Data Inference

- There are 555 orders which have the cost of more than 20 dollars which is 29% of the overall orders placed.
- The average delivery time for these orders being 24 minutes.

Suppose the company has decided to give a free coupon of 15 dollars to the customer who has spent the maximum amount on a single order.

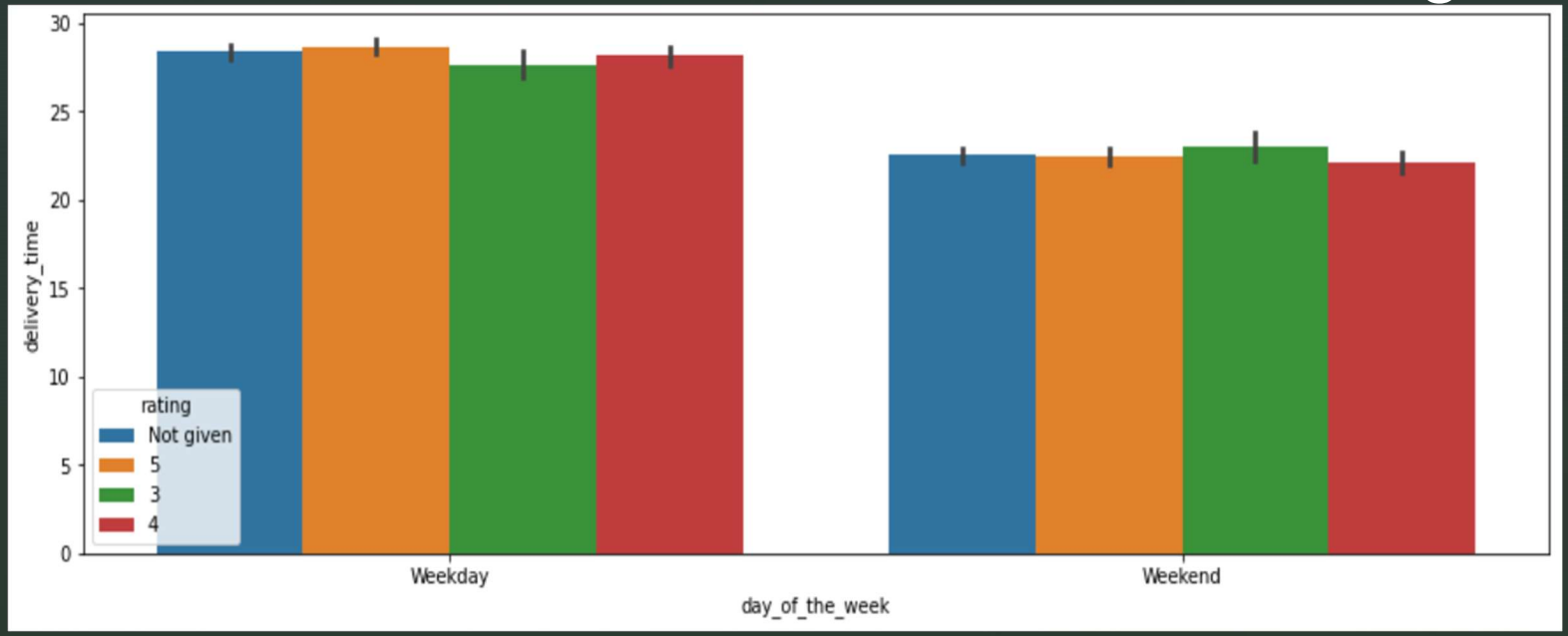
- Customer ID 62359 will receive $15 free coupon for placing the largest single order with order value of 35.41 dollars.
- The order was placed at Pylos Mediterranean restaurant that was prepared in 21 minutes and delivered in 29 minutes.
- The customer provided a rating of 4 for this order.

Food Preparation vs Delivery Time



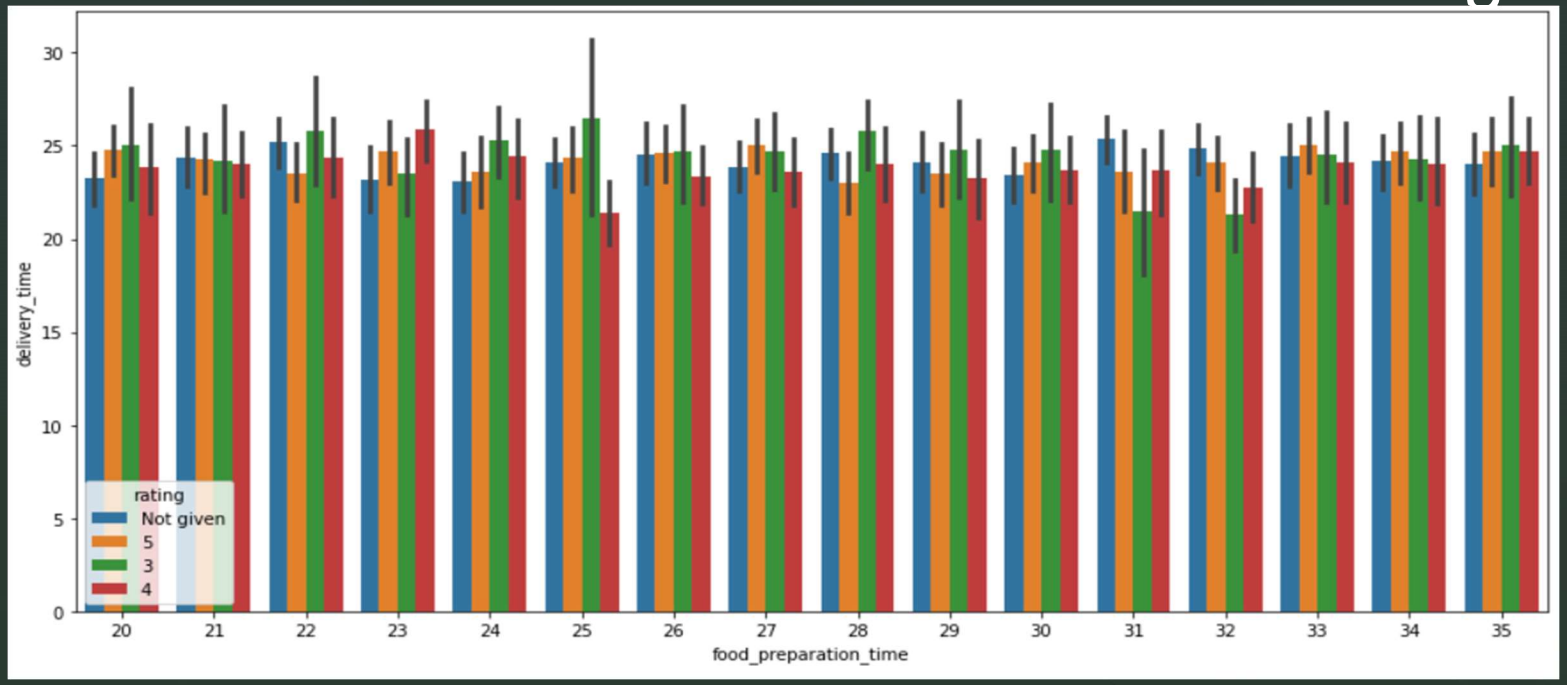
- It takes an average of 24 minutes to deliver for foods ranging in preparation time from 20 minutes to 35 minutes.

Day of the Week vs Delivery Time with Order Ratings



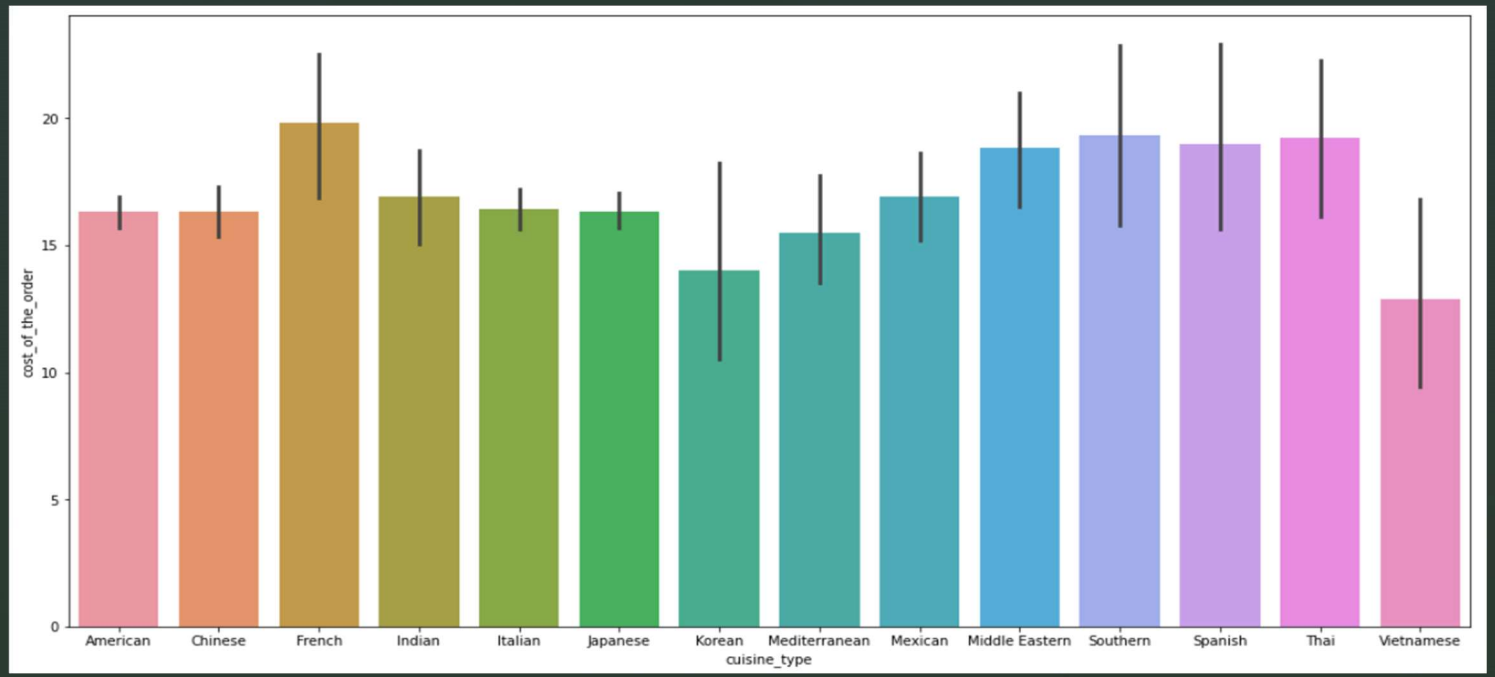
- Restaurants having a rating of 5, their food was delivered within 27 minutes on a weekday and 22 minutes on a weekend. The delivery time is not significantly different on the weekdays and weekends.

Preparation vs Delivery Time with Order Ratings



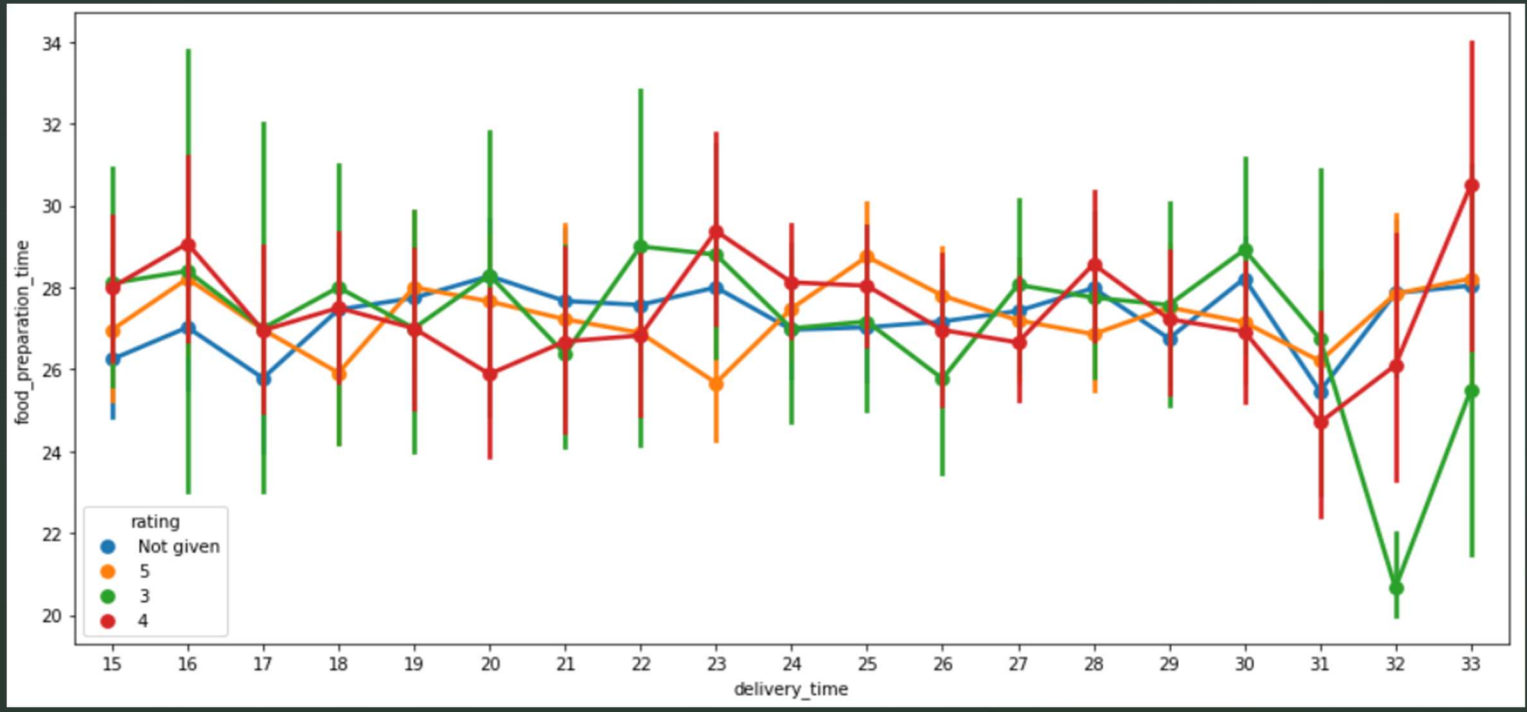
- For rating of 3, the delivery time varied significantly within the same preparation time. For example, for preparation time of 25 minutes with rating of 3, the delivery time ranged from 22 minutes to 31 minutes. It is also evident that food which have had a rating of 5 has taken less time to deliver.

Cuisine Type vs Order Cost



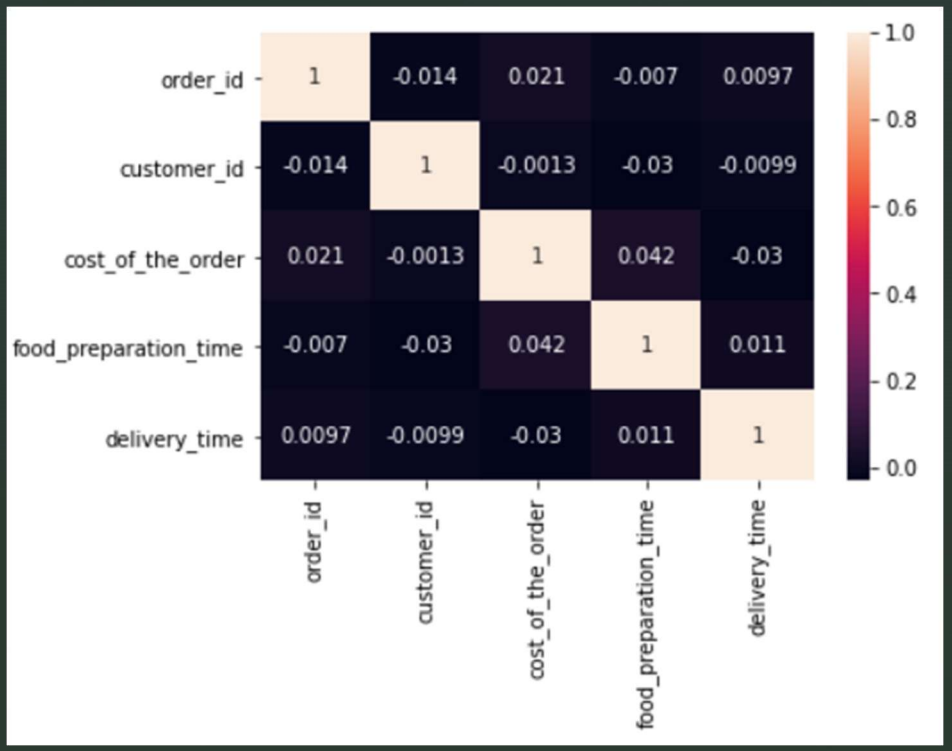
- Vietnamese is the least expensive cuisine while French cuisine is the most expensive.
- Thai, Southern, Spanish and Middle Eastern have the second highest expensive food.
- American, Chinese, Italian, Japanese and Mexican cuisines range the same in their cost of food.
- We see that the IQR for Korean, Southern, Spanish and Vietnamese are high indicating that they have items in their menus which are highly priced. It also indicates that the customers have ordered less items in their order, but it has costed them more.

Delivery vs Preparation Time



- Some restaurants have multiple ratings and that the relationship of these variables are unclear as some of the orders despite being prepared early and had late delivery have had high rating for it and vice versa.

Data Correlation Chart



- The above chart indicates that there is positive correlation among the variables in the dataset.

Promotion Analysis

Suppose 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.

- The company who wants to offer the promotional offer to those restaurants which have at least a rating of 4 and a count of ratings of more than 50 are:
  - Blue Ribbon Fried Chicken.
  - Blue Ribbon Sushi.
  - Shake Shack.
  - The Meatball Shop.

Promotion Analysis

Suppose 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. What is the net revenue generated on all orders?

- The total cost of all orders is $31314.82 generating a net revenue of $6166.303 for the company.

Promotion Analysis

Suppose the company wants to analyze the total time required to deliver the food. What percentage of orders have more than 60 minutes of total delivery time.

- 10.53% of orders have more than 60 minutes of delivery time.

Promotion Analysis

Suppose the company wants to analyze the delivery time of the orders on weekdays and weekends. What is the mean delivery time on weekdays and weekends.

- The mean delivery time on the Weekdays is 28.34 minutes and on Weekends is 22.47 minutes.
- This tells that delivery is quicker on weekends compared to weekdays.

Conclusions and Recommendations

- Based on the given data, we can conclude that the minimum order for any type of cuisine is $4.47 and there have been orders which have costed less than $10 but to delivery them, it has taken minimum of 20 minutes which is a loss considering the amount of profit made for that order.
- Any order placed in the restaurant for any type of cuisine has taken minimum 20 minutes to prepare, the largest being 35 minutes to prepare them, so if the company could consolidate orders from the restaurants which are nearby each other, it would cost them less time to delivery to the people who are also living nearby then they can see some profit margin for them, this can also see in increase of a rating for that restaurant, thereby increasing the number of orders for that restaurants.
- From the above dataset most of the orders belongs to the cuisine type of Korean, Japanese, Italian with American and Indian being the most popular type of food to be ordered the most, so it highly recommended that they consolidate orders from these type of cuisines, so even if the delivery time increases and they can increase the numbers of orders, then there will be profit margin for them.
- The IQR for Korean, Southern, Spanish and Vietnamese are high indicating that they have items in their menus which are highly priced. We can infer that the customers have ordered less items in their order but it has costed them more, so there is no need to consolidated orders on these kinds of restaurants as the profit margin is relatively high for these type of cuisines orders.
- With the above calculations made from the above questions asked, we concluded that the company made around 20% profit for the total revenue generated with the all types of restaurants. It is recommended that they charge the restaurants 35% on orders $20 or more and 20% on orders of $5 or more, they profit margin will drastically increase. It is also recommended that there should be delivery on orders of minimum $10. This margin will sustain owing to the new changes which pandemic brought upon people's life, the company can take this measure to see their profit increase as people who have no time to cook will be forced to order food costing minimum of $10.