

# FOODHUB Data Analysis To Enhance Customer Experience

*Python Foundations*  
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# *Project*

*To Conduct Exploratory Data Analysis For  
Insights of Customers Demand Patterns For  
Decisions Towards Improved Experience*

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# Executive Summary

- ❖ The company may consider ways to reduce the food delivery time especially during the weekdays as the ratings show that better delivery time (including preparatory time) got better ratings.
- ❖ The cost of orders of most cuisines that commands high counts of order numbers like the American, Japanese, Chinese and Italian are pretty much same with their median cost being below 15 dollars.
- ❖ The Might be need to market/advertise those restaurants that was found to have a ratings of over 4 and rating count of over 50 which are Shake Shack - 133, The Meatball Shop - 84, Blue Ribbon Sushi - 73, Blue Ribbon Fried Chicken - 64 and especially those that prepares the American, Japanese, Italian and Chinese Cuisines because that is where the numbers come from based on the ratings.
- ❖ The company may consider a though research on why some other cuisines are not moving as fast.
- ❖ The copany may consider providing feedback to Mediterrenean and Southern Cuisines around the cost of their orders to be competitive aand improve their orders

# Business Problem Overview and Solution Approach

Knowing your customer and understanding their needs and demands is a first major steps towards delivering extraordinary customer experience. FoodHub, in their quest to constantly improve their customers experience and remain very relevant in the chain drives the management to request for a through analysis of the past records based on the data they have stored in tgheir system.

The aim is to get insights of the different patterns in the data and establish which cousine is of high demand, which restaurant gets more order, which days of the week is the order highest, the relationships among the variables like, order cost, prepartory time, delivery time, customer ratings, days of the week with beter orders, among other things

This will require that a data scientist will perfrom univariate, bivariate and multivariate exploratory data analysis using diffent python libraries and visuals to provide clearly this insights and their different correlations and relationships to enable management take the best decisions towards improved customer experience and business outcomes/results.

# Data Overview

- An overview of the Data Frame supplied shows that we have 9 columns and 1898 rows of observations (anging from item 0 to item 1897). It also shows that we have no missing value and that we have 64 integers, 64 floats and 4 objects.
- The columns which represents diffenet variables includes -

1. *Order ID - a number assigned to the Order to track it. We have 1898 unique Order Ids*
2. *Customer ID - the identification number assigned to the customer, we have 1200 unique customer IDs*
3. *Restaurant name - the nameof the reatauranty where the order is placed , we have 178 restaurant names*
4. *Cousine Type - the type of food ordered , we have 14 different unique*
5. *Preparatory Time- the time it took for the to prepare the order*
6. *Delivery Time- thne time it took for the dispatching person to deliver the order after reciving same from the restaurant*

# Data Overview- Contd...

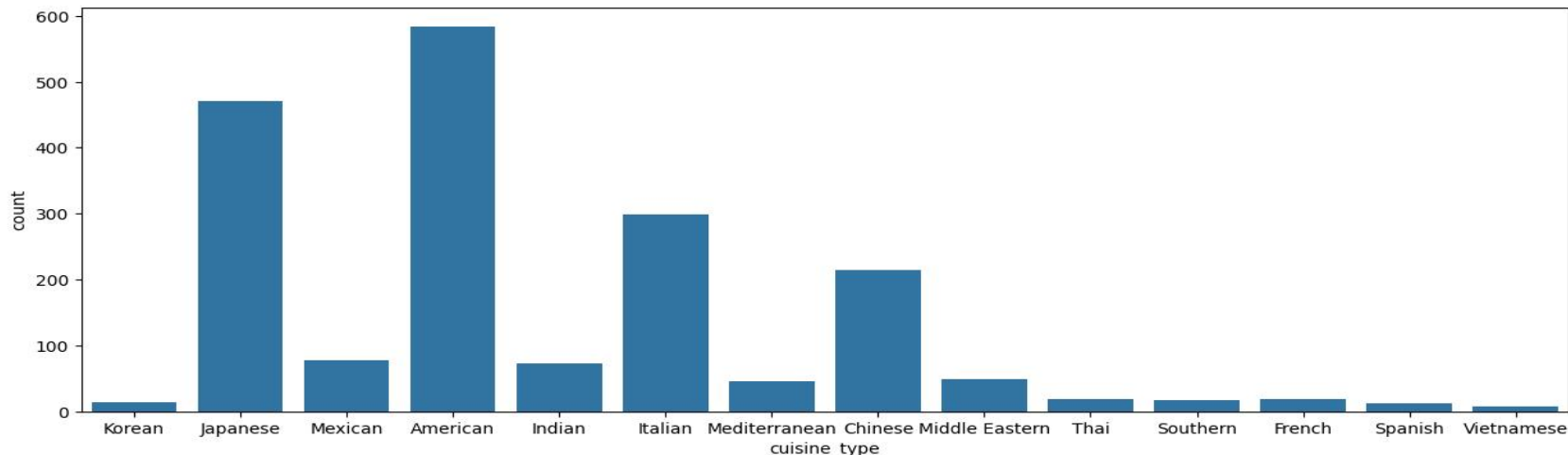
*7. Days of the week the orders were made - classified into weekdays and weekend to know when the order was placed and to track its significance*

*8. Cost of Order - the cost of the food placed and finally*

*9. The Ratings - of the service from the different customers to know how satisfied they are in the overall service*

- We also saw from the overview that it took average of 27 mins to prepare the food while about 75% of the orders were prepared around 31 minutes which is just about 4 minutes deviation from the average. The minimum time it took for the food to be prepared was 20 mins and maximum time was 25 minutes.
- The average cost of food is actually 16.5 dollars with the least cost being about 4.5 dollars. It is also noted that over 50% of the customers has their food below 14.2 dollars while only 25% of the customers has their food above 22 dollars with the highest cost being 35 dollars
- It took average of 24 minutes to deliver the food and over 75% of the food are delivered with 28 minutes with highest time of delivery being 33 minutes.
- Although there are no missing values, the ratings for 736 orders were not given.

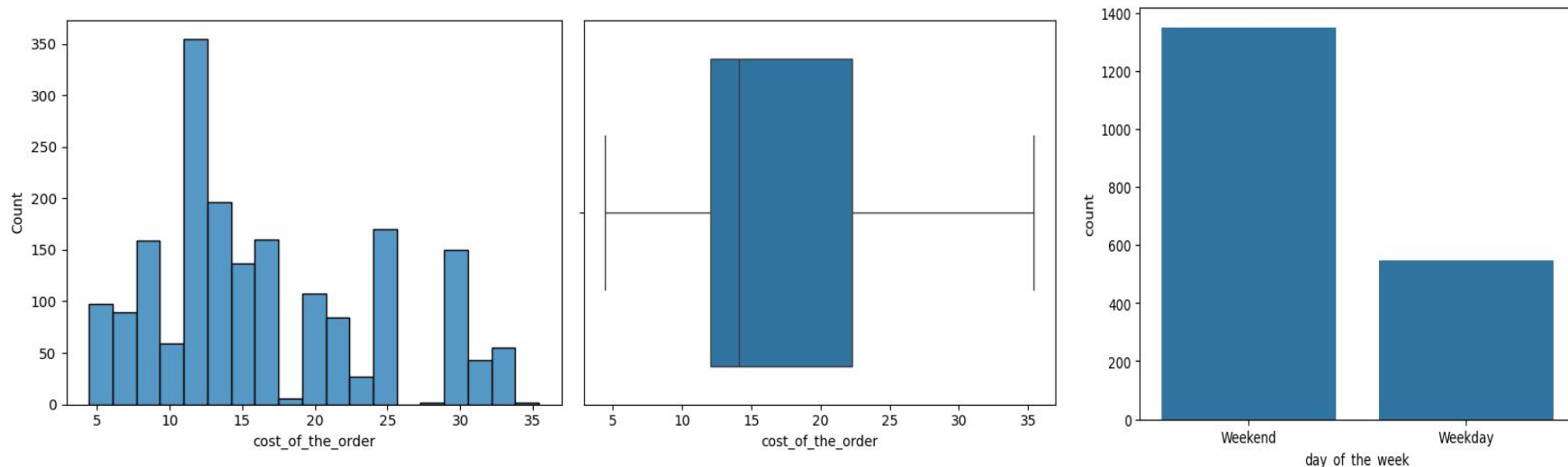
# Univariate Analysis



- ❖ The Unique items and other data cleaning show that there is no duplicate of names, and other items across the columns, and that ***We have 1898 unique Order Ids, 1200 unique customer IDs, we have 178 restaurant names and we have 14 different unique - Korean, Japanese, Mexican, American, Indian, Italian, Mediterranean, Chinese, Middle Eastern, thai, Southern, French Spanese and Vietenamese.***
- ❖ It is also seen that American cuisine tops in terms of counts of orders, followed clsesly by Japanese, then Italian and Chinese. While Vietnamese, Spanish, French and Thai are the least ordered.
- ❖ American cuisine is also the most popular on weekends
- ❖ The most frequent customer with ID 52832 had 13 orders followed by Customer ID 47440 wgo had 10 and then customer ID 83287 who had 9 orders and they had 20% discounts.

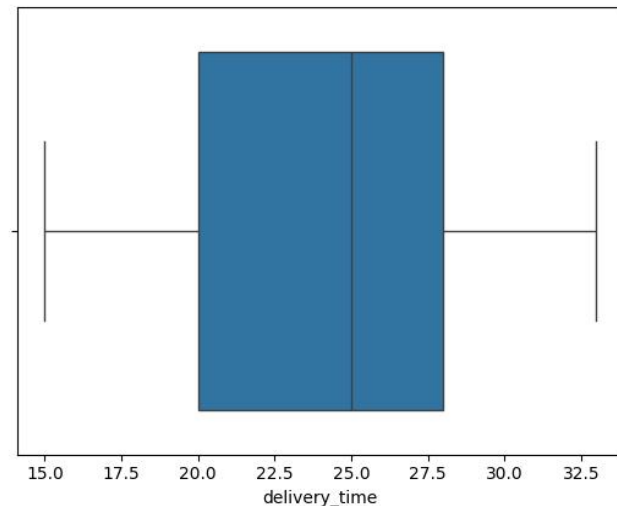
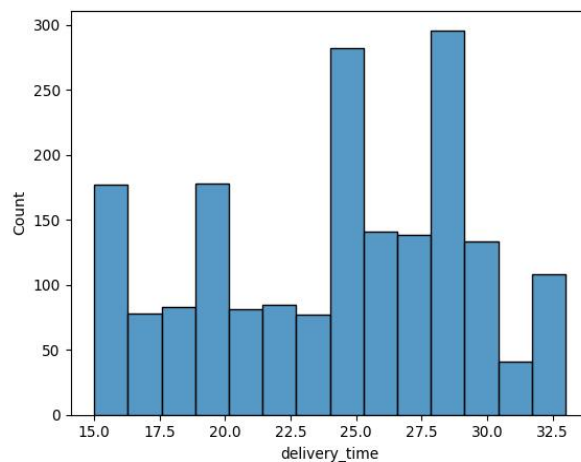
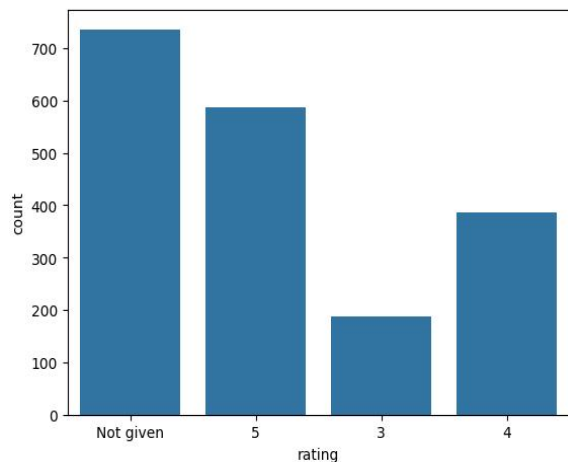


# Univariate Analysis



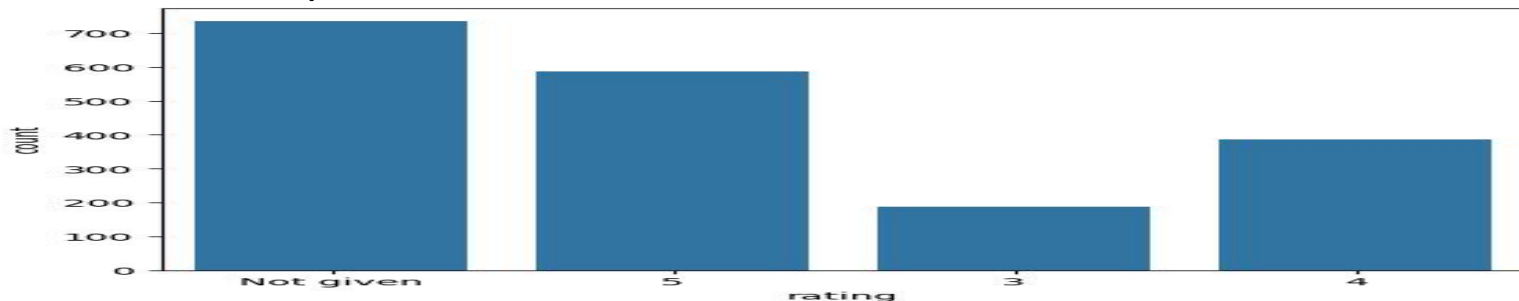
- ❖ Cost of most Orders are also between 12 and 13 dollars while 50% of all orders cost less than 15 dollars. The cost of orders are also skewed to the right as very few orders cost 35 dollars. About 555 orders representing less than 30% of orders cost more than 20 dollars as a matter of fact.
- ❖ Most of the orders are placed on the weekend than they are on weekdays with the weekend orders almost doubling what we have on the weekdays with American cuisine being the most popular weekend order followed by Japanese, Italian and Chinese Cuisines.

# Univariate Analysis



- ❖ Though most ratings were not given, among those that were given, rating of 5 is the highest in terms of count followed by 4 and 3 is the smallest which is encouraging.
- ❖ While 50% of the total cuisines were delivered under 25 minutes which is close to the average delivery time which is 24.16 minutes and the delivery time is slightly skewed to the left.

# Univariate Analysis



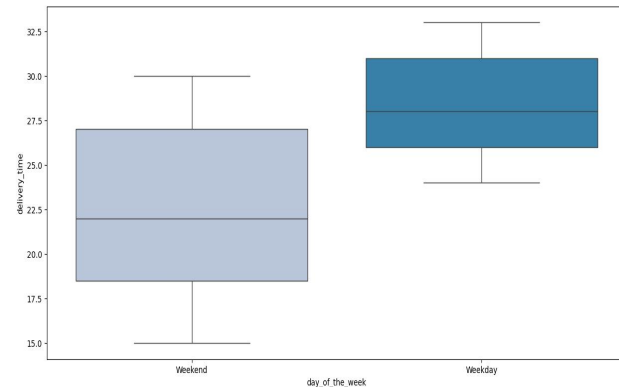
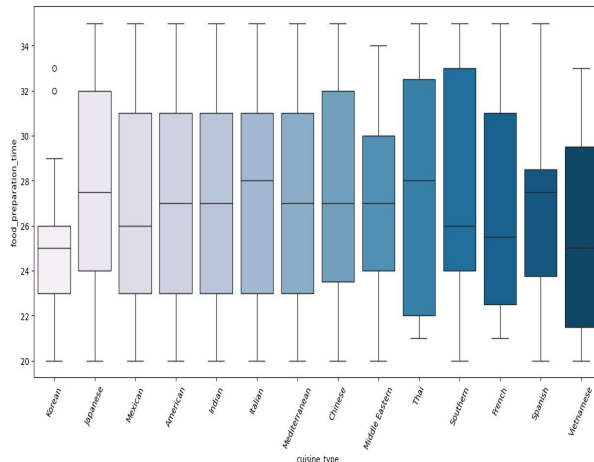
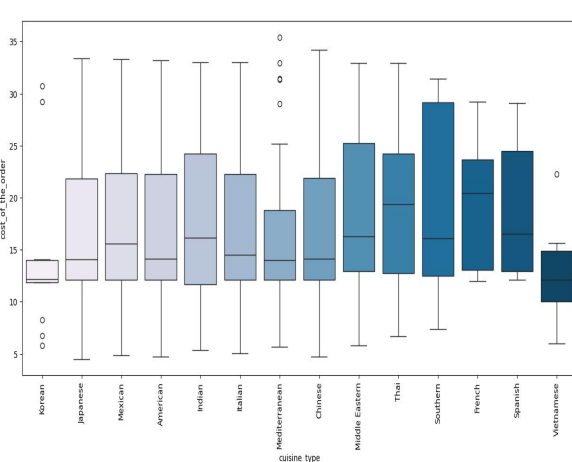
❖ Though most ratings were not given, among those that were given, rating of 5 is the highest followed by 4 and 3 is the smallest which is encouraging. While 50% of the cuisines were delivered under 25 minutes, most cuisines were delivered between 28 and 29 minutes as well as 25 minutes and the delivery time is slightly skewed to the left.

❖ We saw that the top five restaurants based on number of orders received are

1. *Shake Shack* - 219
2. *Meatball Shop* - 132
3. *Blue Ribbon Sushi* - 119
4. *Blue Ribbon Fried Chicken* - 96
5. *Parm* - 68

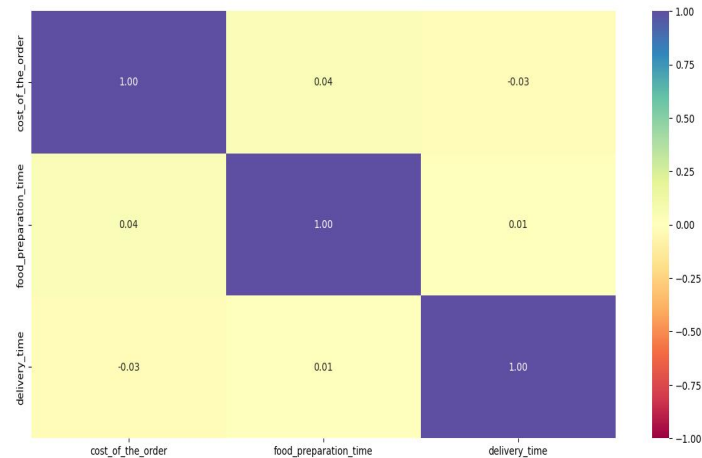
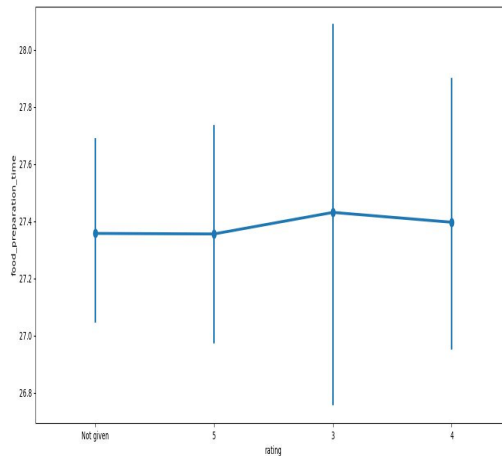
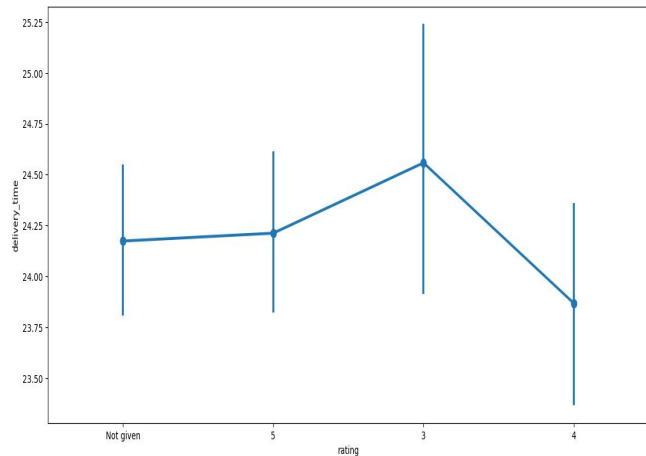
*The five of them also has the highest revenue in that same order with Shake topping the list with a rev of 3,579.53 dollars.*

# Multivariate Analysis



- ❖ Aside a few outliers in Mediterranean Cuisine, the cost of order is highest in Southern though 50% of the orders there are around 15 Dollars. The top four cuisines in order counts - American, Japanese, Chinese and Italian (refer to slide 8) has fairly same cost range and distribution. Vietnamese and Korean are still the least in cost of order even when they are the least in Order count showing their less demand when compared.
- ❖ The Food preparation time is not significantly different across cuisines apart from Spanish, Thai, Southern and Korean that took the lowest time.
- ❖ It also took significantly higher time to deliver the orders during weekdays than weekends probably due to road traffic as it has been established earlier that the weekend orders are also significantly higher so the workload in weekend are higher.

# Multivariate Analysis



- Apart from those that rated 3, it is observed from the point plot above that those that the ratings are better with lower delivery time (taking that 5 is best rating).
- The food preparation time is fairly the same across the ratings (taking that 5 is best rating).
- It is also seen and good to note that those that ratings were not given had about the same delivery and food preparation time as those that rated 5.
- The food preparation time and cost of order seem to have the highest correlation while delivery time and cost of order seem to have least interdependence with the least correlation.

- The total net revenue made by the company is 6 166.3 dollars
- The following restaurants were found to have a rating of over 4 and a rating count of over 50: Shake Shack - 133, The Meatball Shop - 84, Blue Ribbon Sushi - 73, Blue Ribbon Fried Chicken - 64
- Only about 11% (10.54%) of the total orders took over 60 minutes to be delivered, including the preparation time.
- The mean delivery time for weekdays is 28 minutes
- And the Average delivery time for weekend is 22 minutes

# Conclusions

- There is a strong and valuable insights into customer preferences, restaurant performance, and delivery operations provided by the data sets.
- The majority of orders are placed on Weekends.
- American cuisine is the most popular.
- There's a correlation between rating and delivery time.

# Recommendations

- The Might be need to market/advertise and provide other incentives to those restaurants that was found to have a ratings of over 4 and rating count of over 50 which are Shake Shack - 133, The Meatball Shop - 84, Blue Ribbon Sushi - 73, Blue Ribbon Fried Chicken - 64 and especially those that prepares the American, Japanese, Italian and Chinese Cuisines because that is where the numbers come from based on the ratings.
- Offer discounts or promotions during weekdays to boost sales.
- Optimize delivery operations to reduce delivery time, especially during peak hours.



# APPENDIX



Happy Learning !

