RESTAURANT RATING PREDICTION USING ZOMATO DATA

What is zomato and why we chose it ?

Zomato is an application which aggregates the restaurants and a food delivery app which offers many services for their customers. Zomato is more focused into the food ordering industry which is located in India.

It uses a mobile application which enables people to view restaurants nearby and allowing them to order from a restaurant of their choice.

Zomato was first introduced as an app which was used to find restaurants and people would critique the restaurants based on several parameters such as location, food, ambience, cost, and best service offered.

What is zomato and why we chose it ?

Later Zomato expanded their services when they entered the food delivering industry and now it is one of the top companies in India which competes with other food delivery applications such as uber eats, swiggy, and food panda.

Zomato also offers monthly and yearly subscription for their customers which provides great benefits to their customers such as one plus one offer in dining at selected restaurants per day. Discounts for customers if they use their membership and order food through their app.

What is zomato and why we chose it ?

From marketing perspective, it is interesting to see the factors which has influence in the popularity of a restaurant.

Our dataset contains Bangalore restaurant reviews. Bangalore is a famous city, and it is without a doubt one of the best cities which offers an amazing quality of food and food services at the restaurants.

We chose Zomato, because Zomato has compiled every restaurants info in their database and people can view the reviews for each restaurant in case if they are planning to dine in or order food through the mobile application.

Objective:

Our main goal is to accurately predict the rating of a restaurant based on several different factors such as restaurant name, location, type of restaurant, name, online order, online table booking, votes, average cost and cuisine.

This will help us understand what all factors to consider while starting a new restaurant and make it successful.

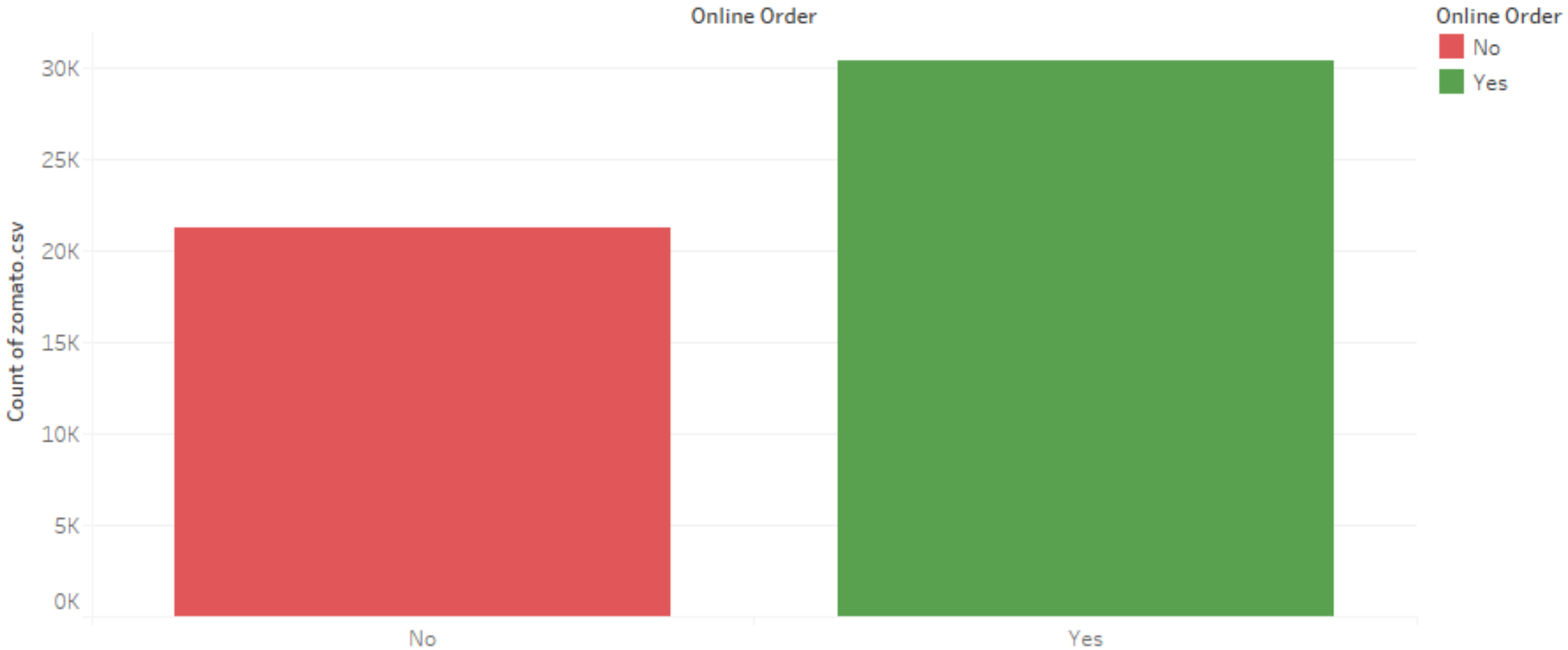
Dataset Description

Description: The dataset consists of 51717 rows and 17 columns. Following are the columns:

Dataset link: (kaggle): https://www.kaggle.com/himanshupoddar/zomato-bangalore-restaurants
url: URL of the restaurant on zomato website
address : Address of restaurant in bangalore
online_order : Whether the restaurant has online ordering
book_table : Whether restaurant offers online table booking
rate : Rating of restaurant on Zomato (target variable)
votes : Number of user votes the restaurant has
phone : phone number of the restaurant
localtion : neighbourhood in which the restaurant is located in
rest_type : Different restaurant types
dish_liked : Dishes people liked at the restaurant
cuisines : cuisines offered by the restaurant
avg_cost (cost for two people) : average cost for two people
review_list : Restaurant review on Zomato
menu_item : Items in the menu of the restaurant
listed_in(type) : type of restaurant
listed_in(city) : localities in bangalore

Number of restaurants with online ordering

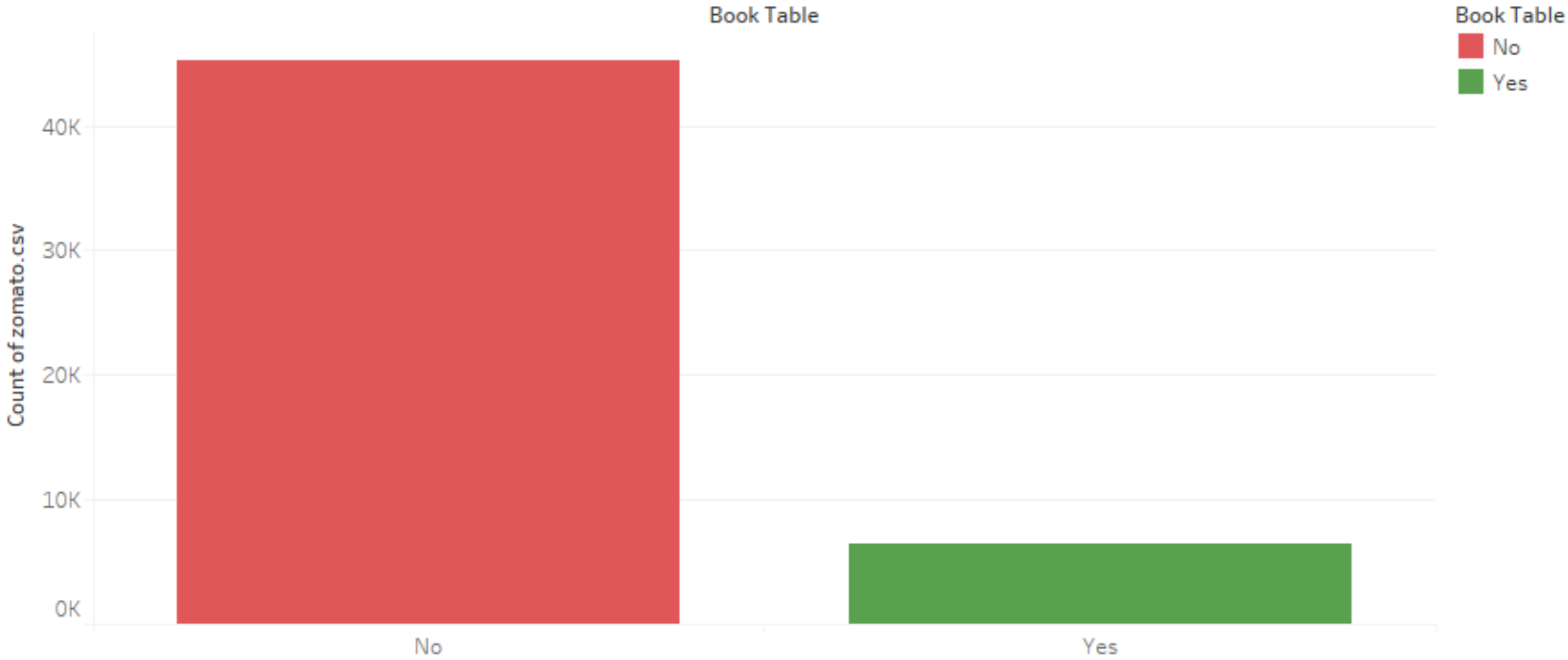
Number of restaurants with online ordering



From the chart, we can see that majority of the restaurants have online ordering facility.

Number of restaurants with online table booking facility

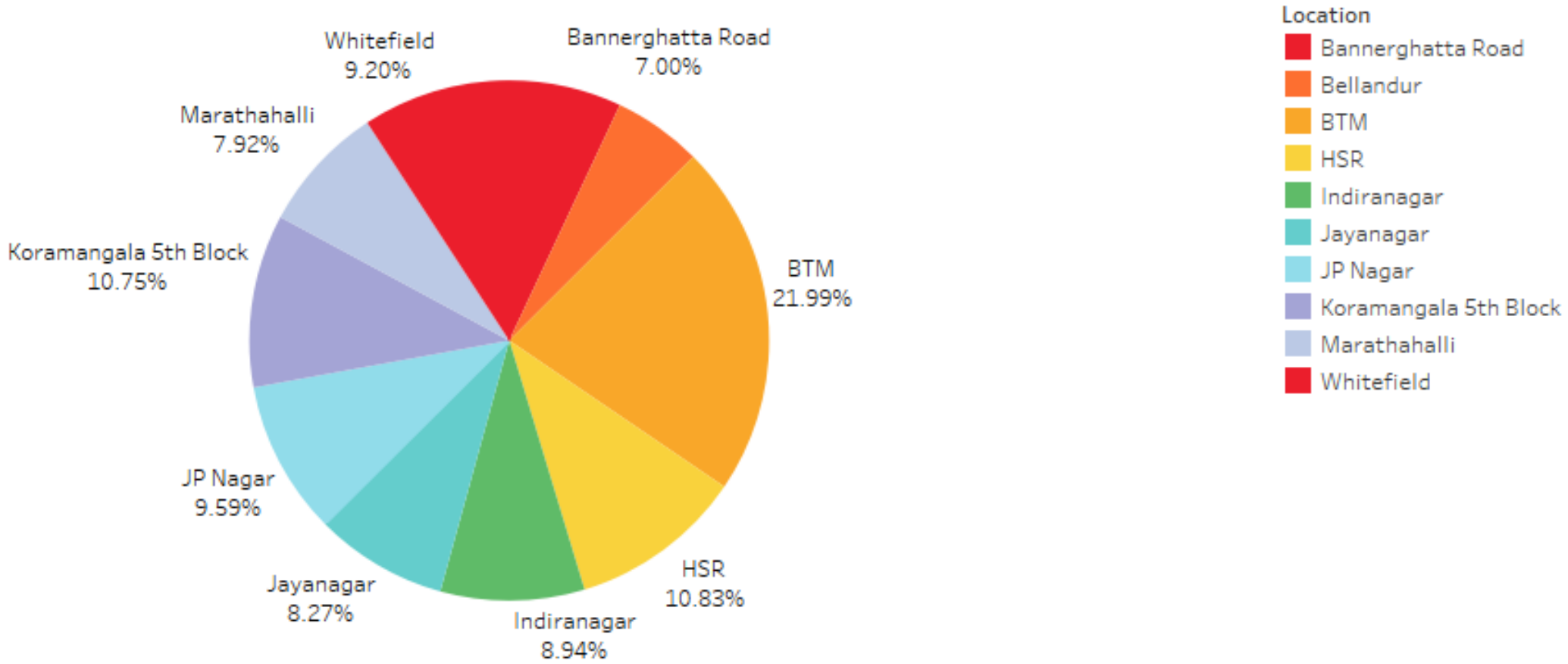
Number of restaurants with online table booking facility



From the chart, we can see that most of the restaurants don't have online table booking facility

Top 10 locations with high concentration of restaurants

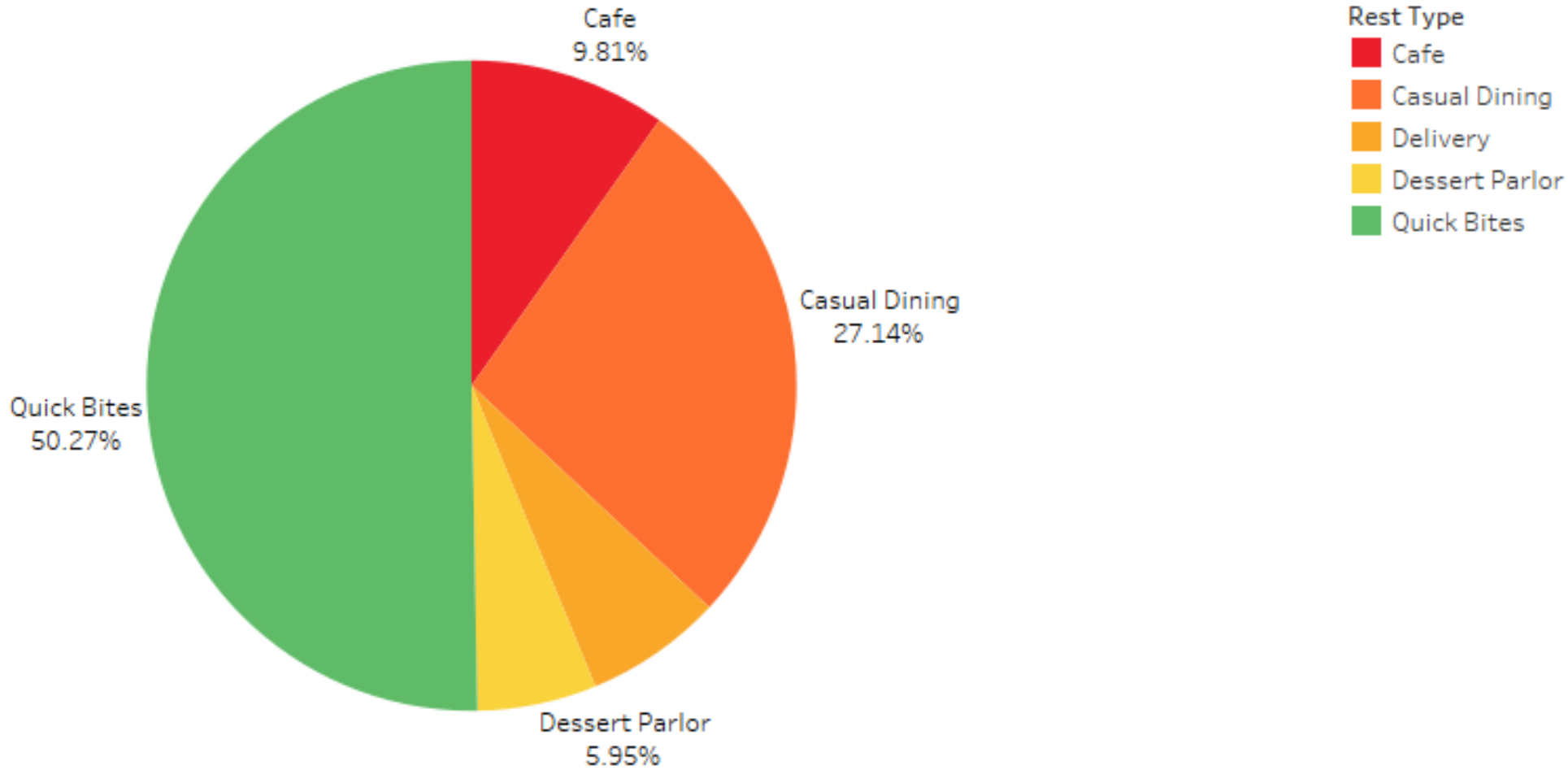
Top 10 locations with high concentration of restaurants



From the chart, we can see the top 10 locations with highest concentration of restaurants. BTM, HSR and Indiranagar have the highest concentration of restuarants

Types of restaurants

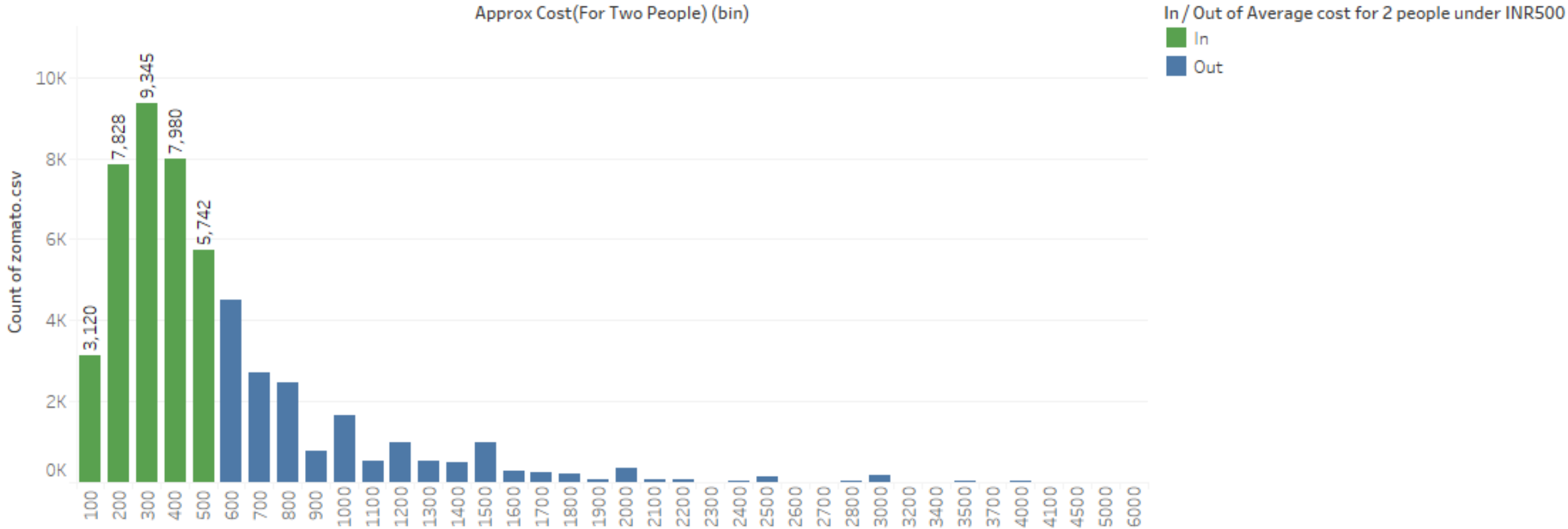
Types of restaurants



From the chart, we can see that quick bytes is the most popular restaurant type. This could mean that most of the people prefer food on the go in bangalore.

Distribution of average cost for two people

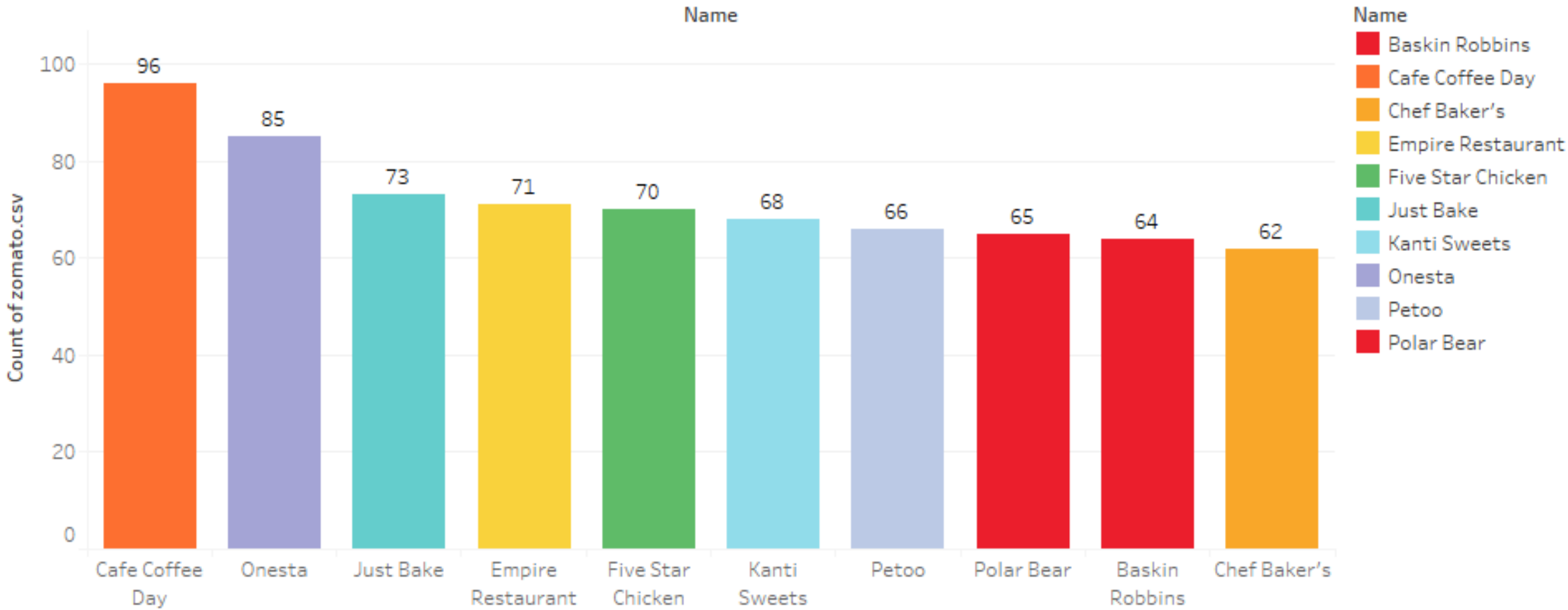
Distribution of average cost for two people



From the chart, we can see the distribution of average cost for two people across different restaurants. Furthermore, we can infer from the chart that average cost for two people at most of the restaurants fall under 500INR

Top 10 restaurant with highest number of franchises

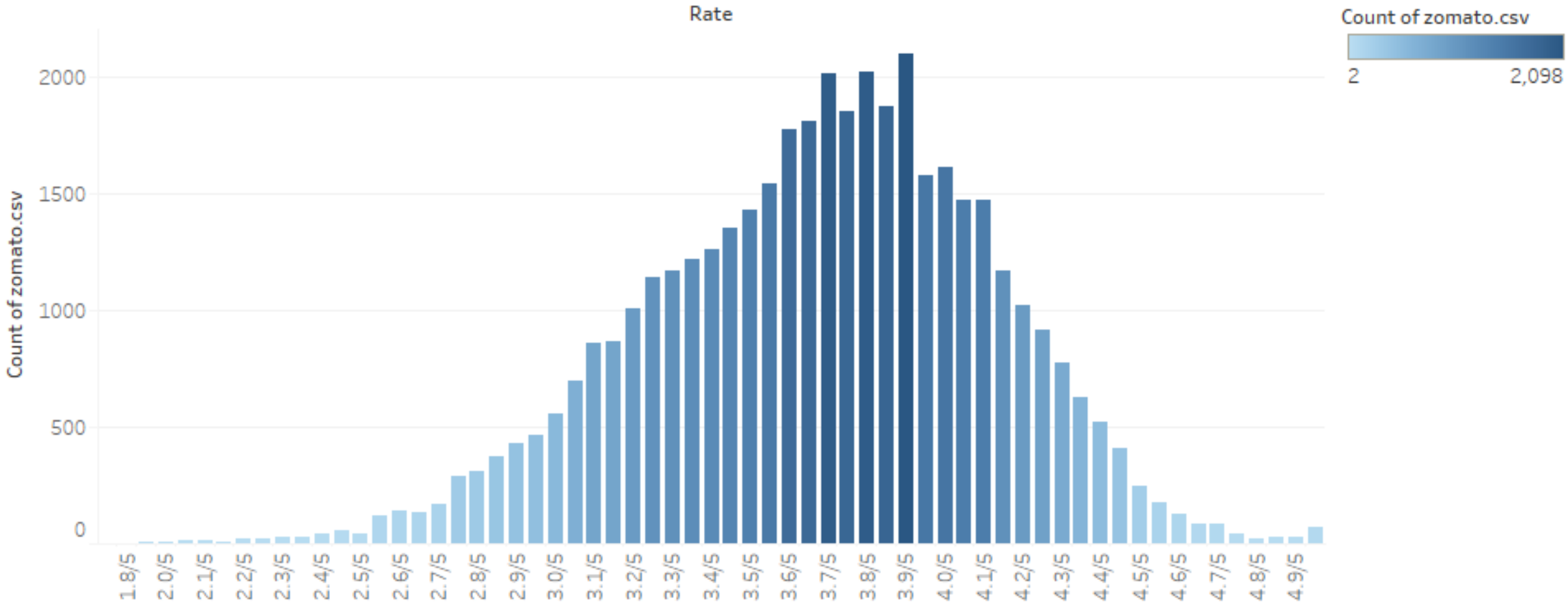
Top 10 restaurant with highest number of franchises



From the chart, we can see the top 10 restaurants with most number of franchises in bangalore.

Distribution of ratings

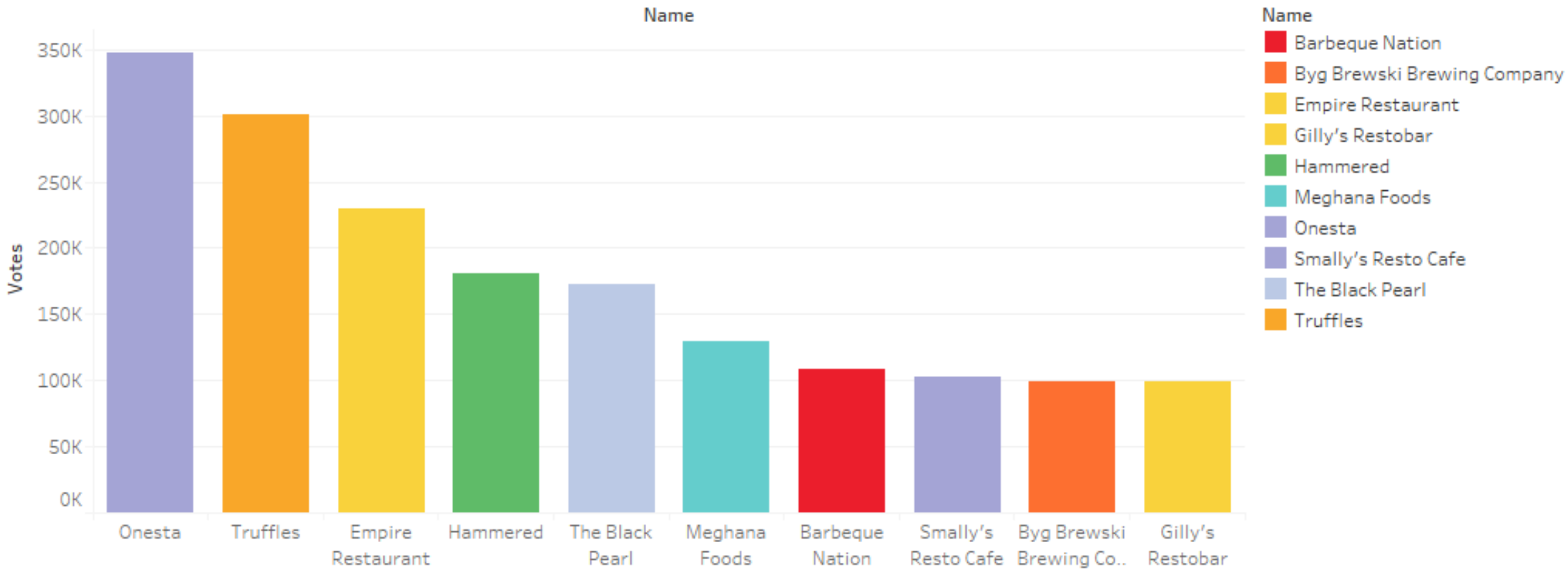
Distribution of ratings



From the chart, we can see the distribution of ratings of different restaurant. In addition, we can infer from the chart that majority of the restuarants are in the range of 3.2 to 4.2 stars.

Top 10 restaurant with highest votes

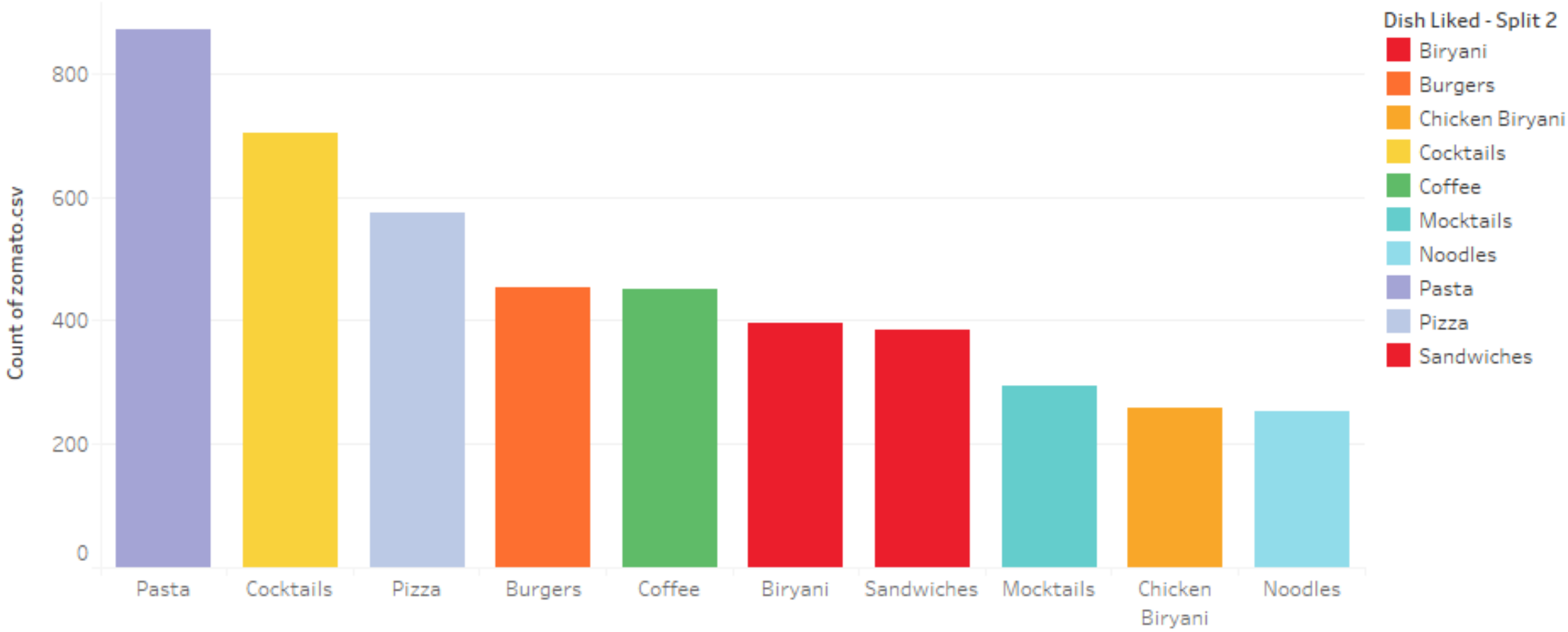
Top 10 restaurant with highest votes



From the chart, we can see the top 10 restaurants with highest votes. Votes is an important factor when it comes to rating and popularity.

Top 10 most liked dishes

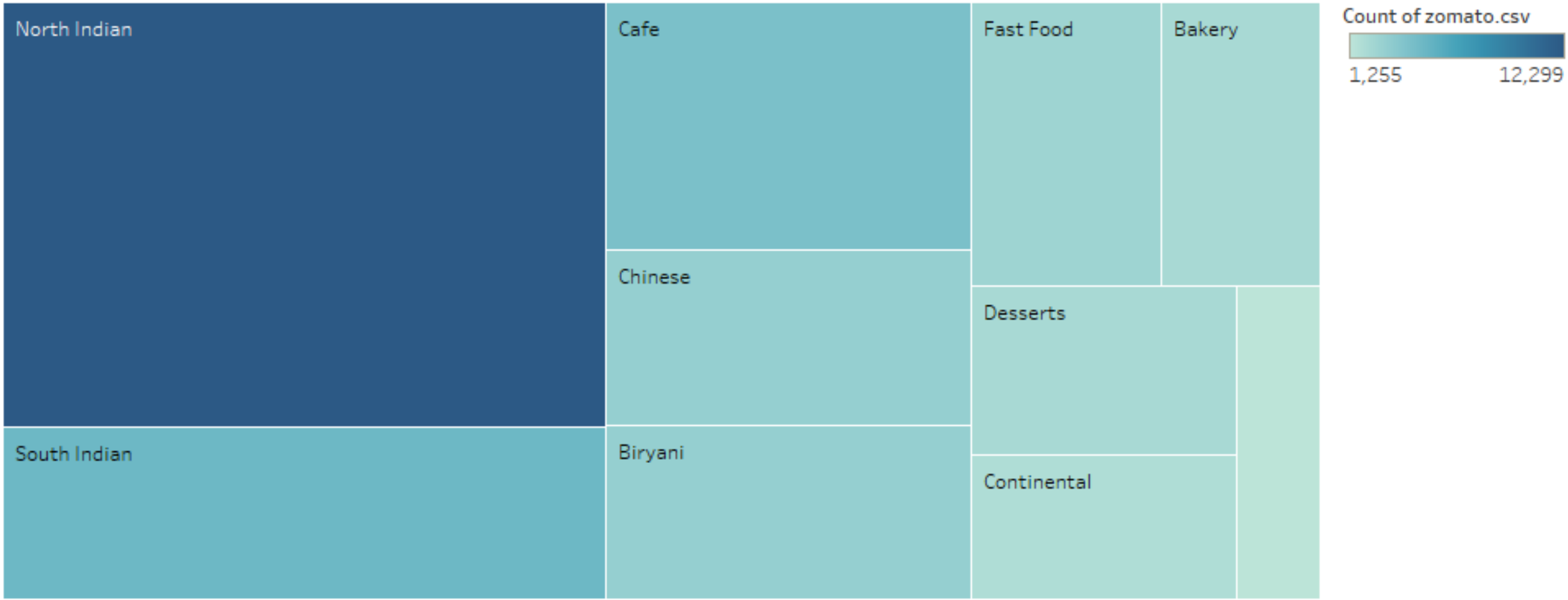
Top 10 most liked dishes



From the chart, we can see the top 10 most liked dishes. Furthermore, we can see that pasta is the top liked dish.

Most favorite cuisine in Bangalore

Most favourite cuisine in bangalore

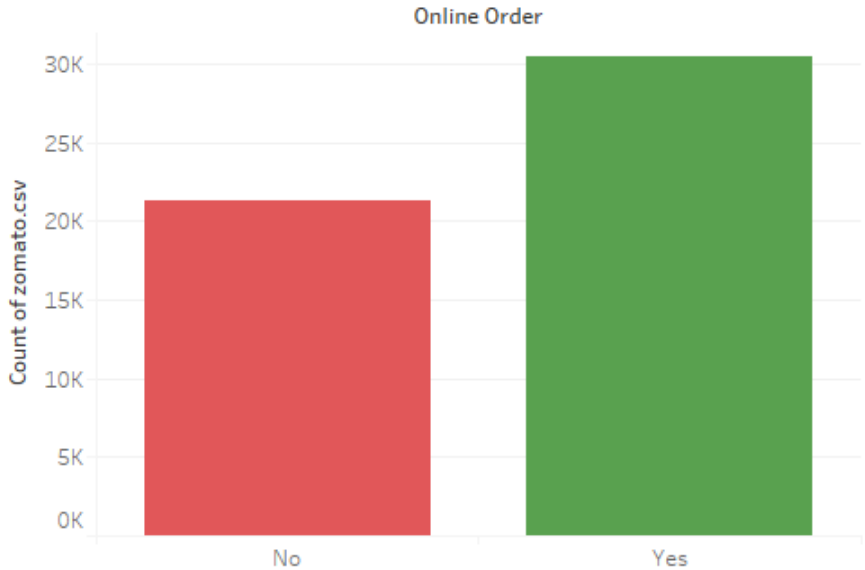


From the chart, we can see that north indian is the most favourite indian cuisine

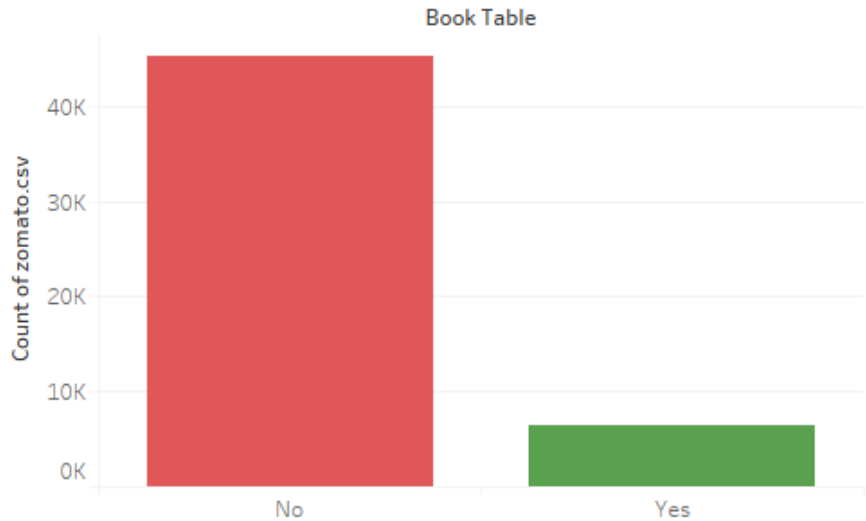
Dashboard: EDA Features (Part 1)

EDA Features (Part 1)

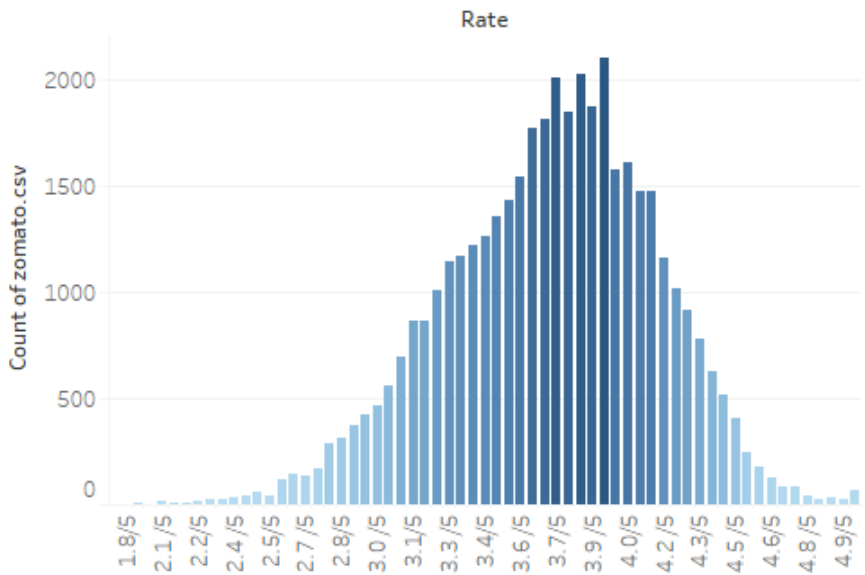
Number of restaurants with online ordering



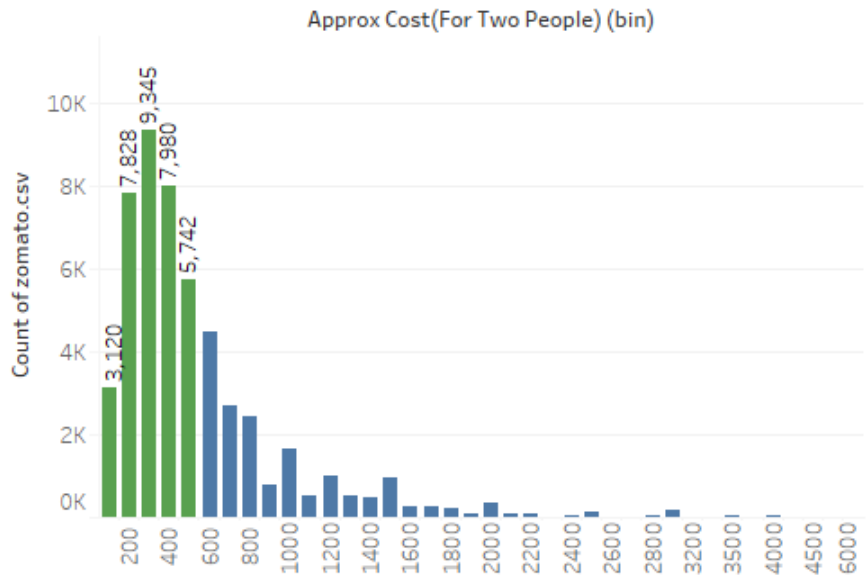
Number of restaurants with online table booking facility



Distribution of ratings



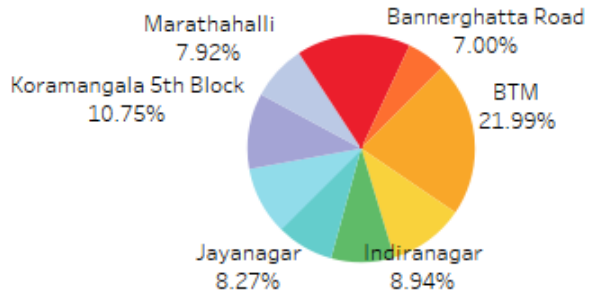
Distribution of average cost for two people



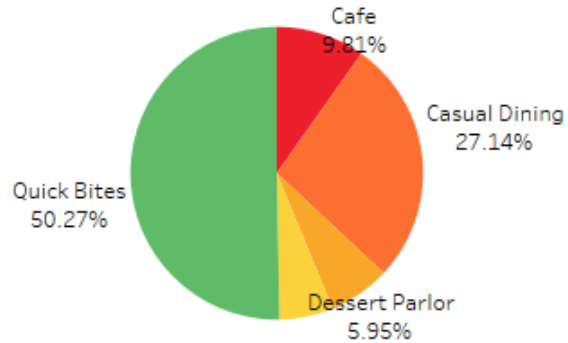
Dashboard: EDA Favorites (Part 2)

EDA Favourites (Part 2)

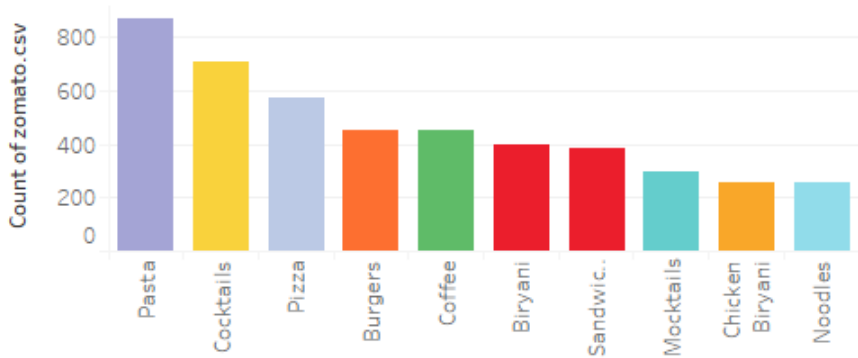
Top 10 locations with high concentration of restaurants



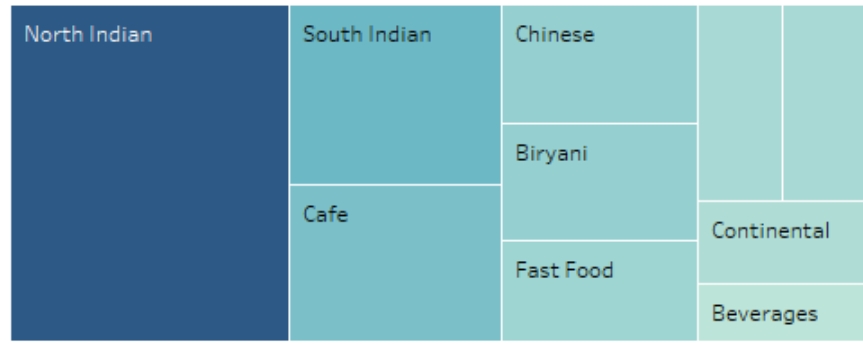
Types of restaurants



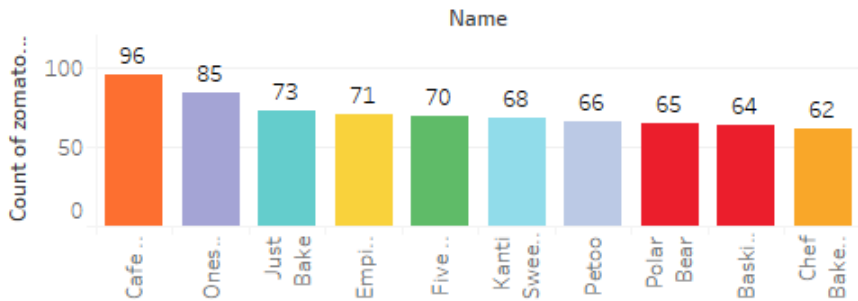
Top 10 most liked dishes



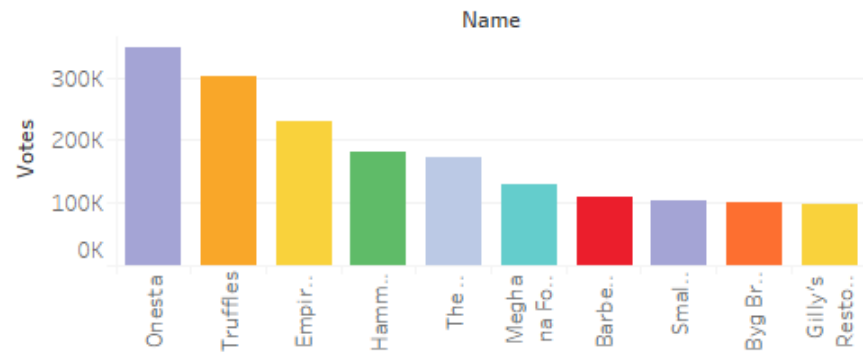
Most favourite cuisine in bangalore



Top 10 restaurant with highest number of franchises



Top 10 restaurant with highest votes

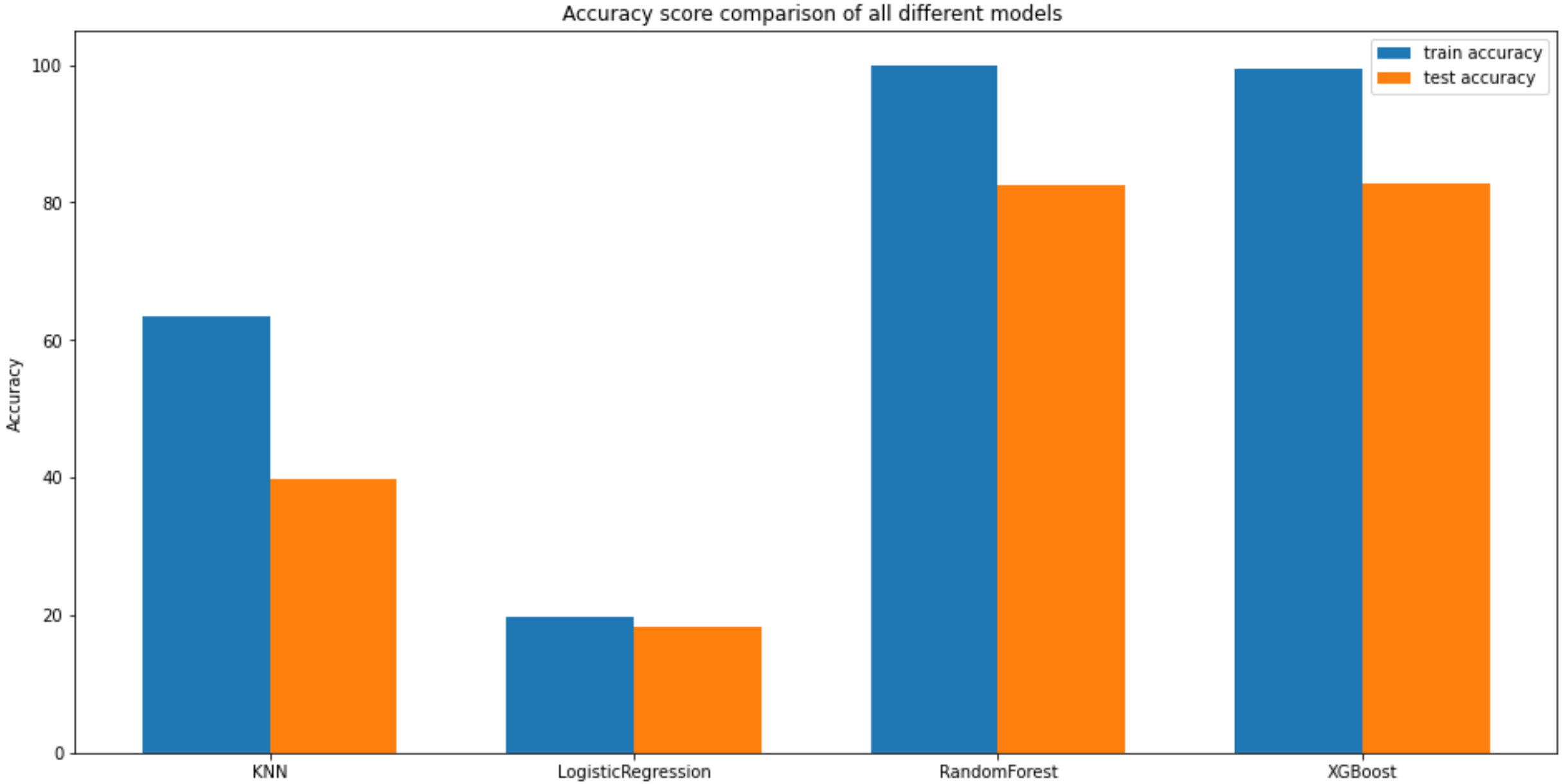


Why use machine learning?

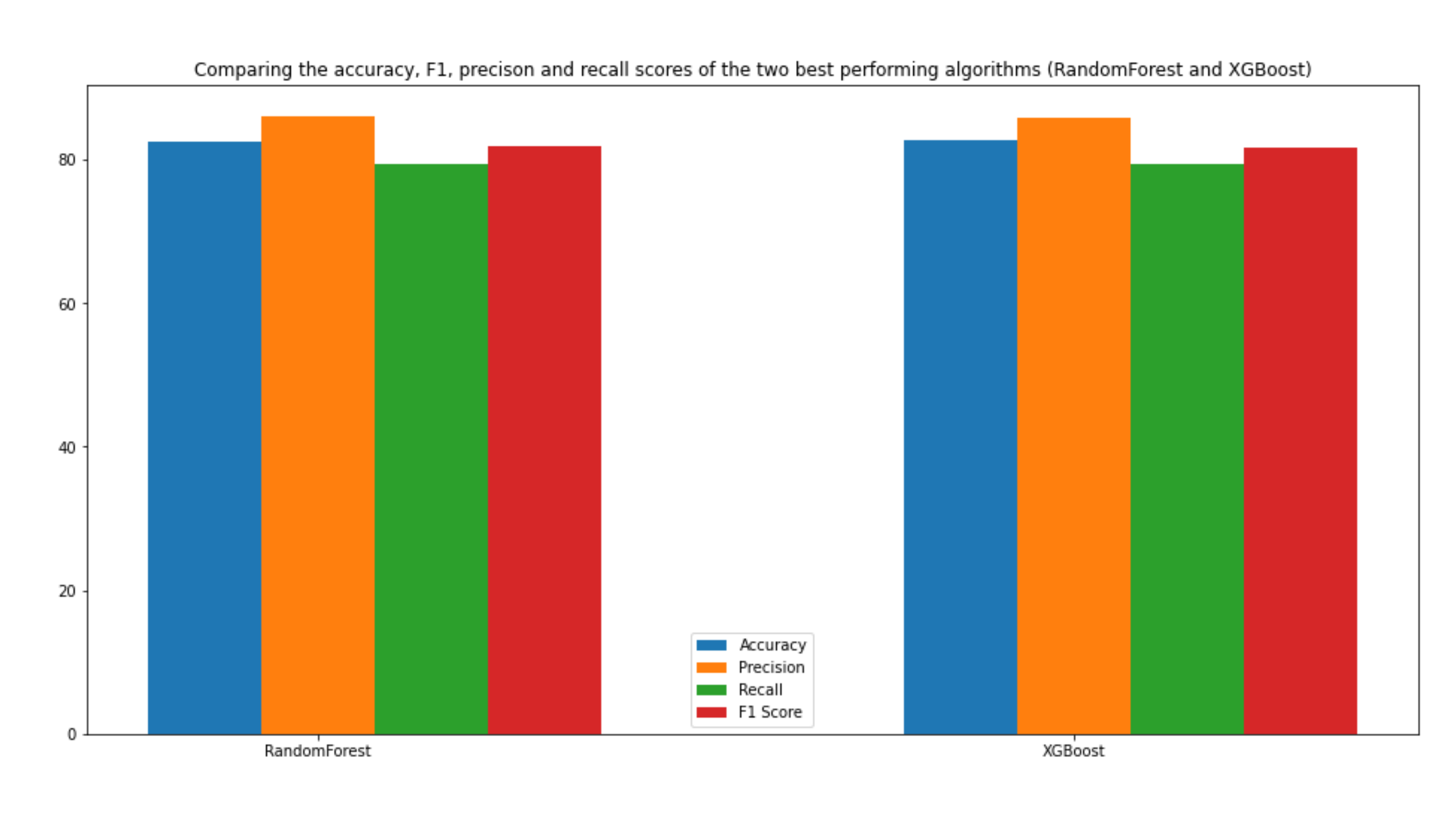
Machine Learning will provide us the computational ability to process large data sets, use the data in different models, train the models using existing data to predict the test data and then perform evaluation metrics to see the accuracy of the model and if it is a good fit for real time data.

Comparing accuracies of all the algorithms

Algorithm	Accuracy
KNN	Train Accuracy : 63.56% Test Accuracy: 39.80%
Logistic Regression	Train Accuracy : 19.72% Test Accuracy: 18.34%
Random Forest	Train Accuracy : 100.00% Test Accuracy: 82.57%
XGBoost	Train Accuracy : 99.35% Test Accuracy: 82.74%


Accuracy score comparison of all different models
train accuracy
test accuracy
Accuracy
100
80
60
40
20
0
KNN
LogisticRegression
RandomForest
XGBoost

Comparing the accuracy, F1, precision and recall scores of the two best performing algorithms (Random Forest and XGBoost)


Comparing the accuracy, F1, precison and recall scores of the two best performing algorithms (RandomForest and XGBoost)
0
20
40
60
80
RandomForest
XGBoost
Accuracy
Precision
Recall
F1 Score

Conclusion:

- Quick Bytes is the top restaurant type.
- Cafe Coffee day has the highest number of franchises.
- Majority of restaurants are accepting online orders
- Most of the restaurants do not have online table booking facility.
- BTM, Indiranagar and Koramangala has the highest concentration of restaurants.
- Average cost for two people is 400INR
- Most like casual dining dish is Biryani chicken
- Most of the popular dishes are all non vegetarian
- Indian, Mughalai and thai are the most popular cuisines.

From a marketing perspective to start a successful restaurant:

- **BTM, Koramangala and Indiranagar are good places to start a new restaurant because of a high concentration of restaurants it must be popular among foodies and it will be cheaper to operate in these areas.**
- **Offering online order could affect overall rating**
- **It is important to have all or at least one of the following cuisines Indian, Mughlai and Thai.**
- **It is better to have an average cost for two under 500INR in the beginning.**
- **Fast food could boost the rating of the restaurant.**

Thank you

References

- https://www.freepik.com/free-photo/top-view-pepperoni-pizza-sliced-into-six-slices_7572611.htm#query=pizza&position=17
- https://www.freepik.com/premium-photo/group-friends-eating-together_2695320.htm#query=restaurant&position=17
- https://www.freepik.com/free-photo/restaurant-interior_1243339.htm#query=restaurant&position=18
- https://www.freepik.com/