

Online Food Delivery Analysis in Bengaluru region

Ashwin Gadge-22070243020

Juned Manyar-22070243023

Ajinkya Kadam-22070243024



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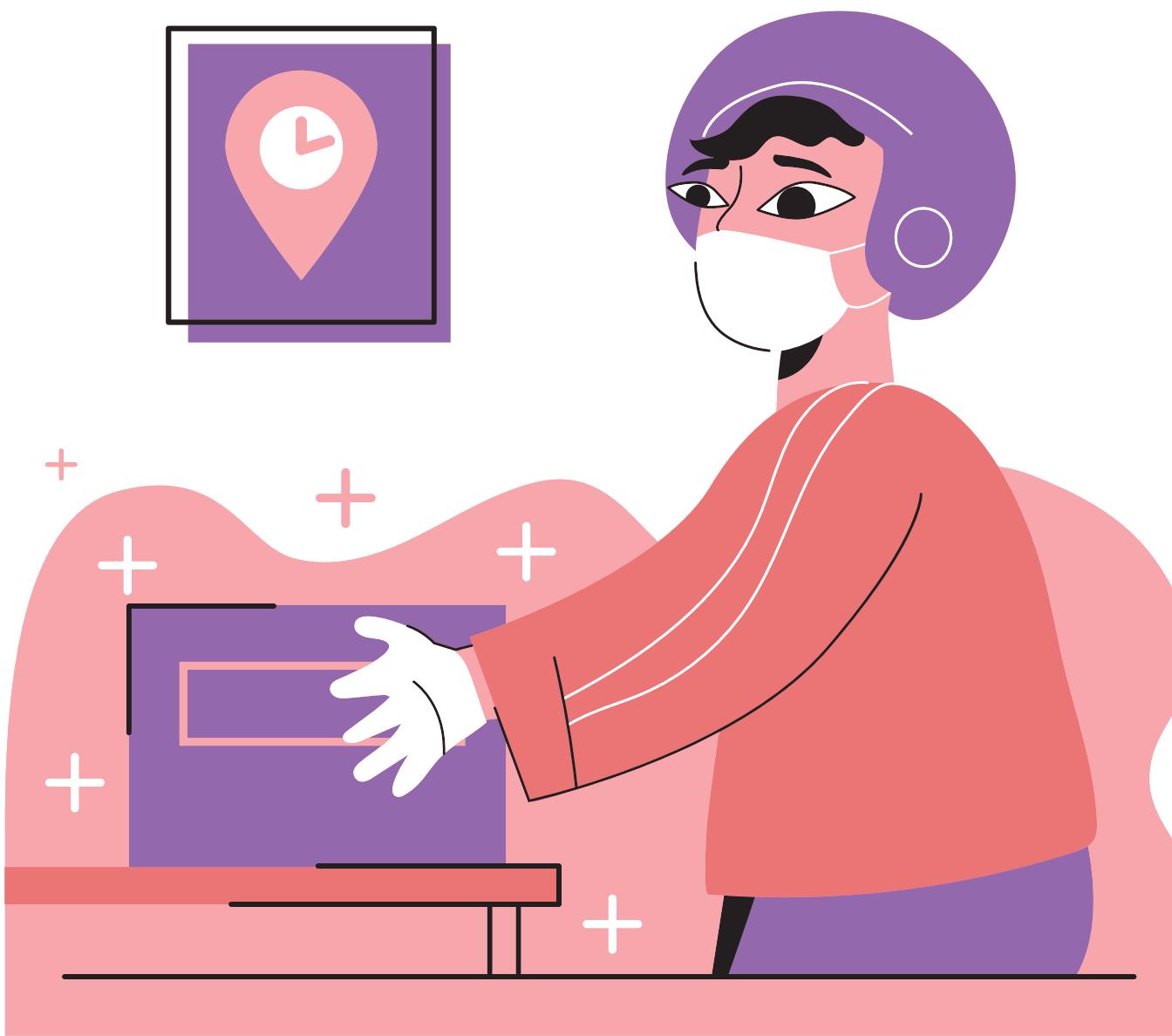
INTRODUCTION

In recent years, Bangalore's restaurant industry has witnessed a transformative shift, driven by the fast-paced urban lifestyle. Online food delivery platforms like Swiggy, Zomato, and Dunzo have become lifelines for busy residents, offering their favorite dishes at home. Delivery captains are the backbone, ensuring seamless transactions. Customer feedback is key, impacting restaurant demand and platform loyalty. Our study in Bangalore employs data analysis tools like Random Forest and ArcGIS to explore customer behavior, order patterns, location influence, and more. We map customer locations, revealing insights into hotspot areas, restaurant clusters, and proximity's impact on choices.

OUR

Objective

1. Collect latitude and longitude coordinates of consumers to map their locations within Bangalore.



Food Delivery

Identify factors driving online food delivery adoption in Bangalore.



Proximity's impact

Study proximity's impact on service quality, satisfaction, and usage frequency.



Explore Patterns

Explore customer order patterns, cuisine preferences, and delivery choices.



Data enhancement

Employ consumer data to enhance platform retention strategies.

OUR

Problem - Statement



Food Quality and Service Alignment:

Challenge in meeting customer expectations in the growing online food delivery industry in Bangalore.



Customer Retention in Competitive Market:

Understanding and motivating repeat orders to retain loyal customers.



Geospatial Delivery Efficiency:

Planning delivery routes and locations for operational effectiveness.



Data-Driven Decision Making:

Leveraging data for informed choices in the online food delivery ecosystem.

Dataset Description



The dataset utilized in this study encompasses a wide range of data with approximately 55 variables, which are systematically organized into four main categories:



Demographics

Personal attributes of survey respondents, such as age, gender, and income, to analyze their influence on online food delivery choices.

General Purchase Decision

Data on consumers' attitudes, preferences, and criteria when using online food delivery services.

Time of Delivery Influence

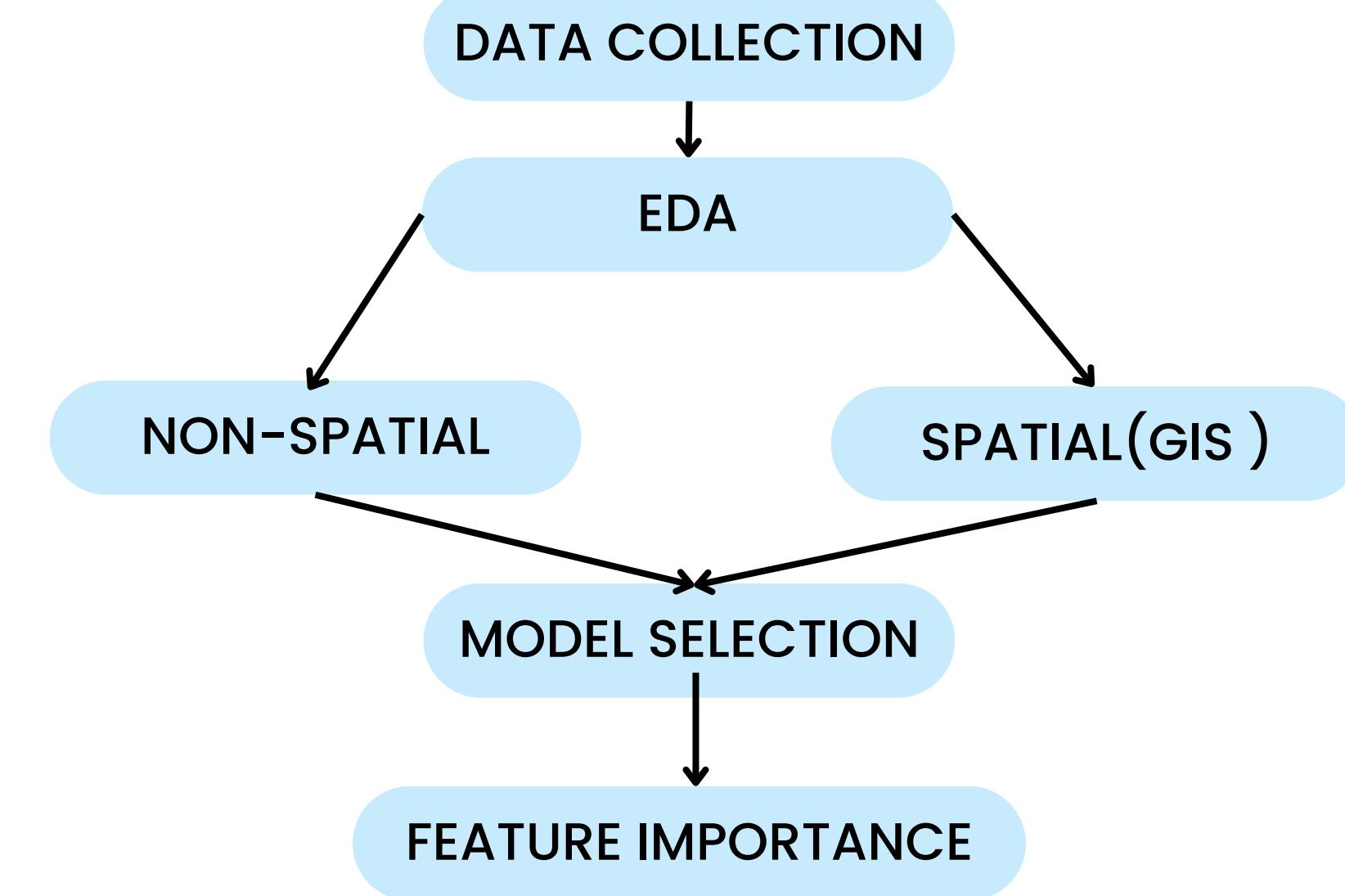
Information on how delivery speed and punctuality impact consumer choices.

Restaurant Rating Influence

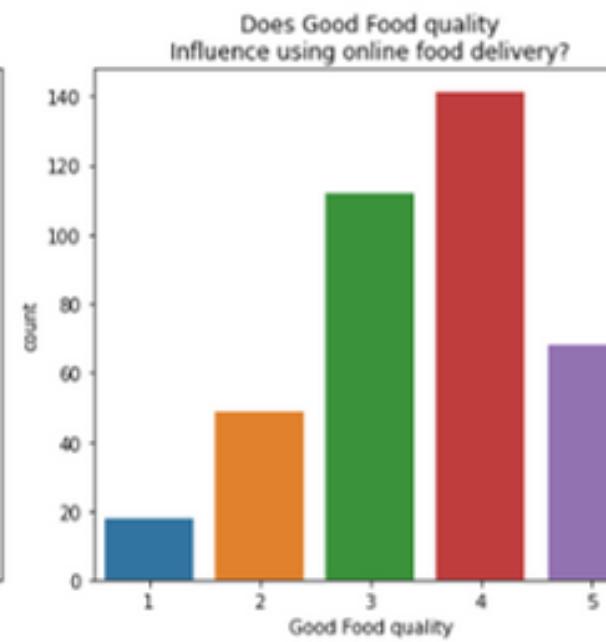
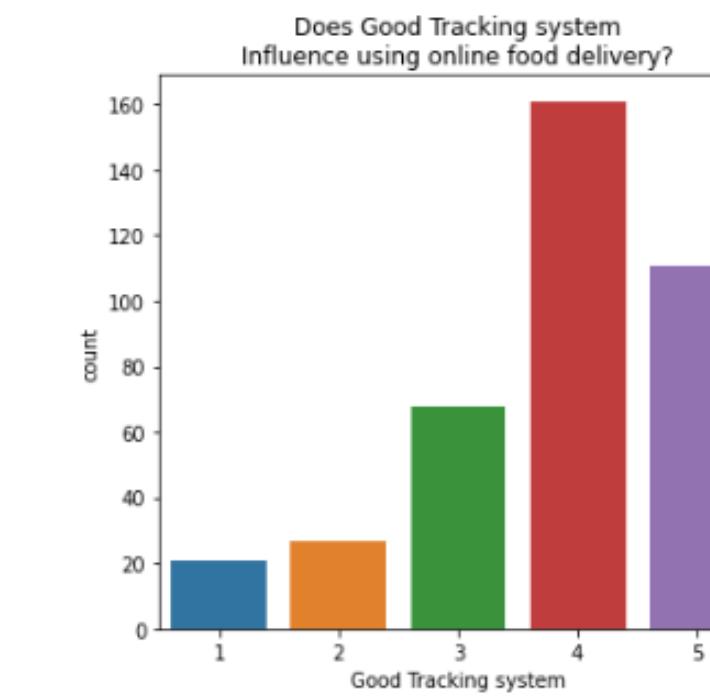
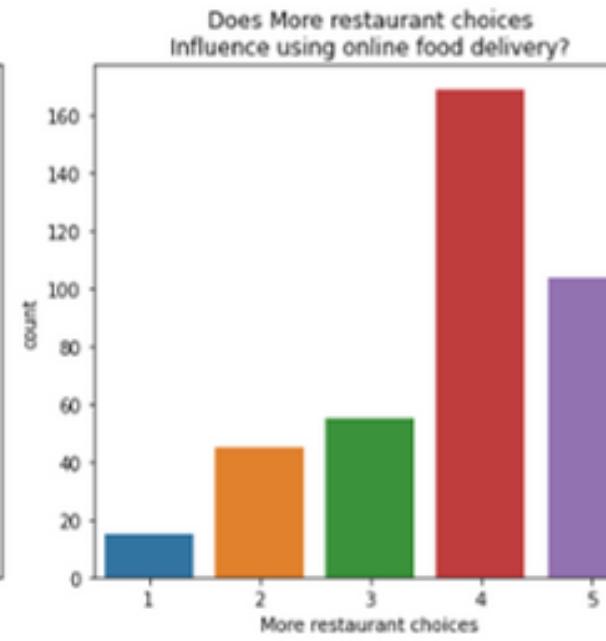
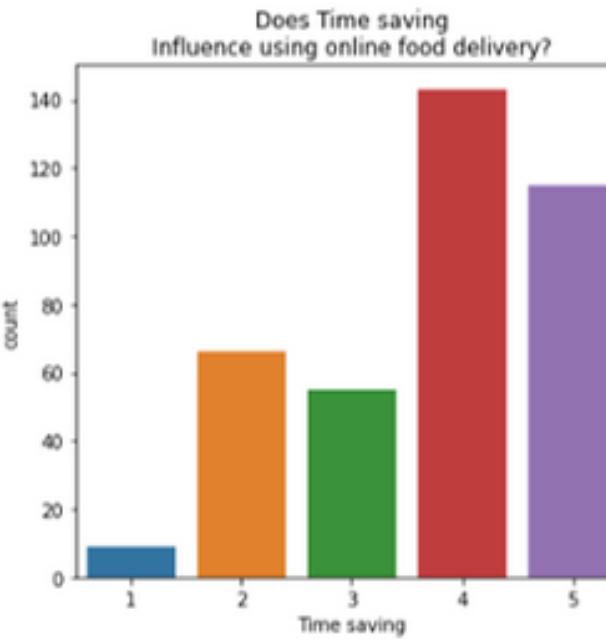
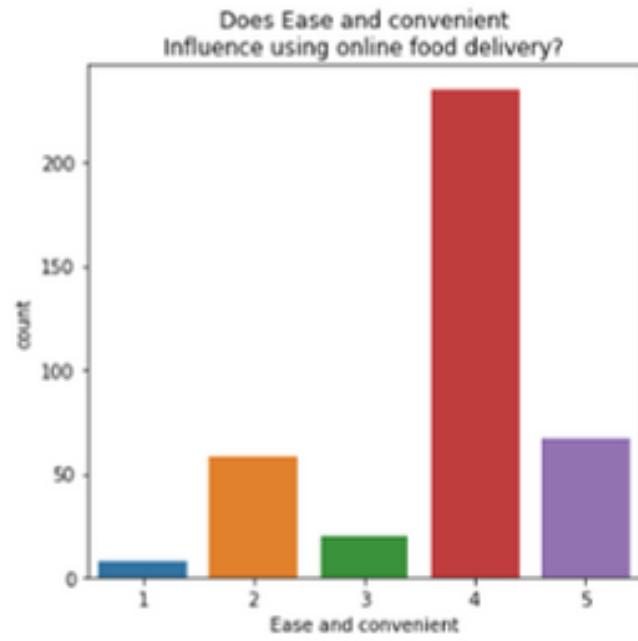
Data on how restaurant quality and ratings affect consumer decisions in online food delivery services.

Data collected through a survey in Bangalore, India, provides insights for improving the online food delivery industry.

Methadology



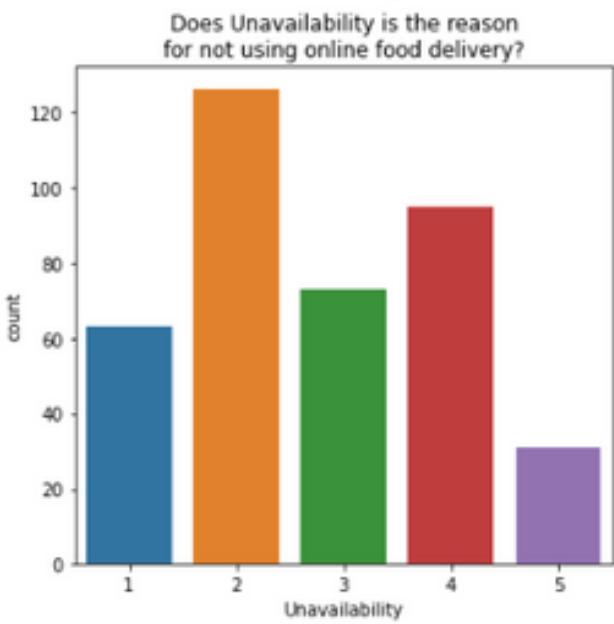
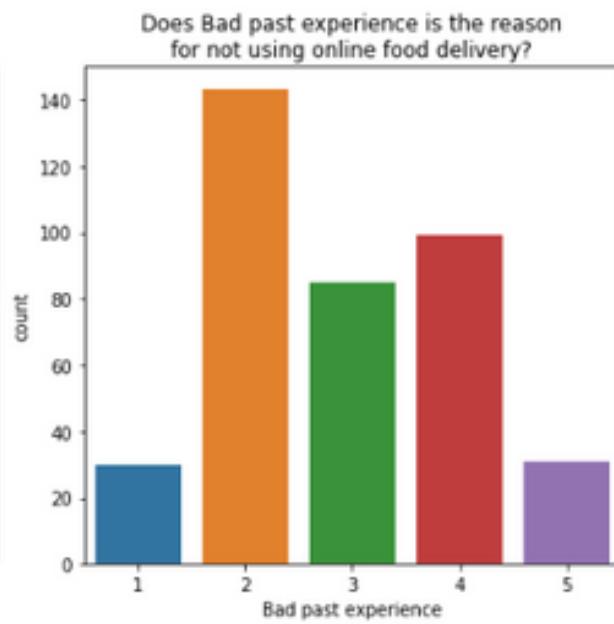
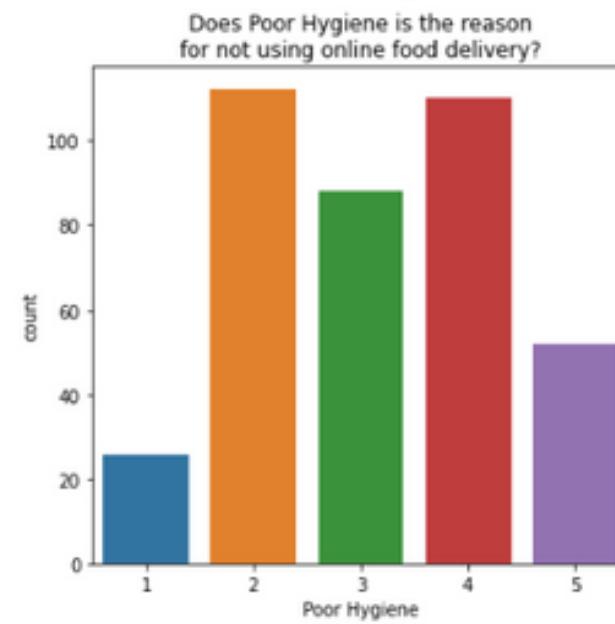
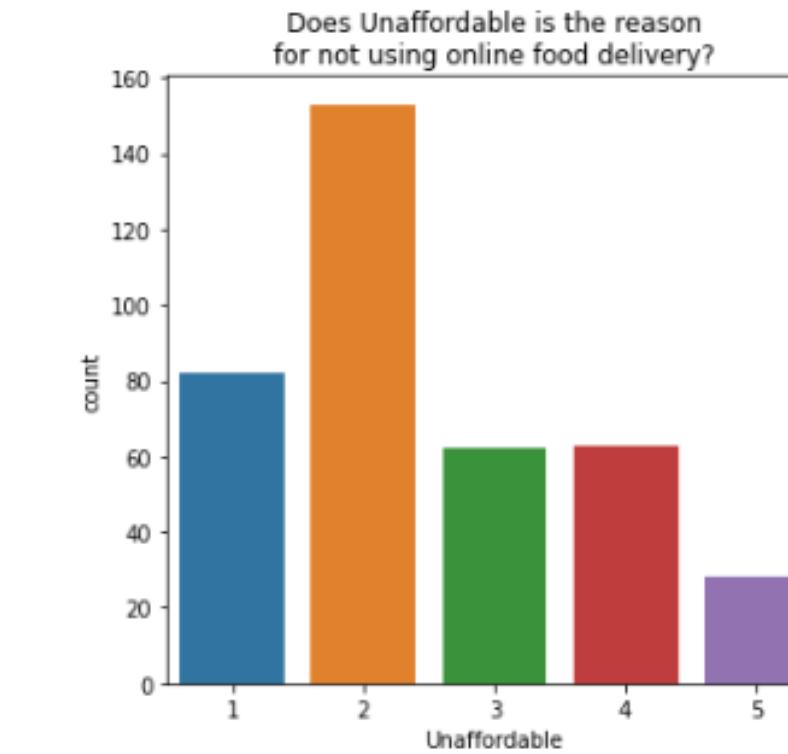
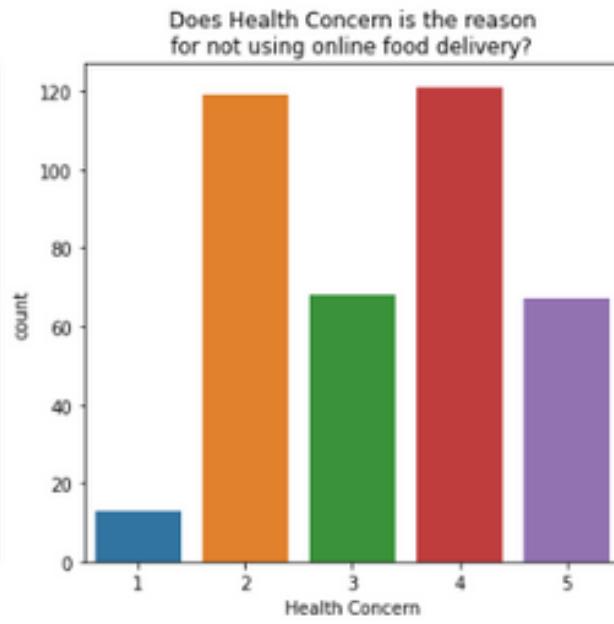
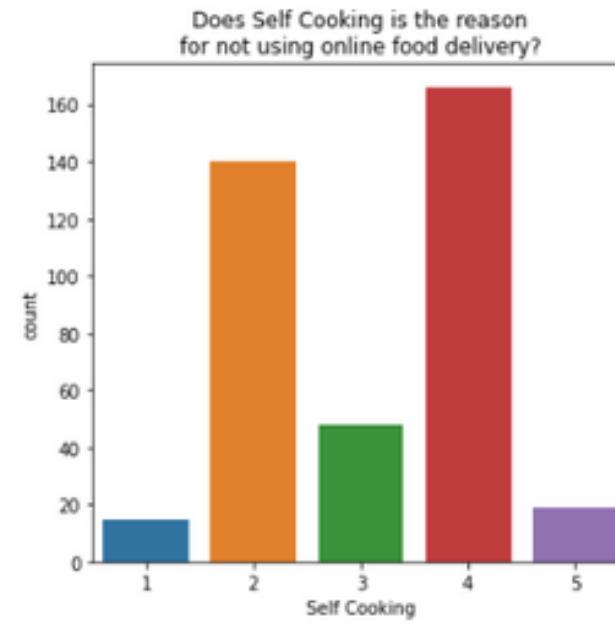
Exploratory Data Analysis (EDA)



What Features Influence Respondents Using Online Food Delivery?

From the questions asked, most respondents answered 4 (Agree) and followed by 5 (Strongly agree), so it can be said that respondents are influenced in using online food delivery if the things in the question can be improved such as easier application usage, more time saving, more restaurant choices, more discount, etc.

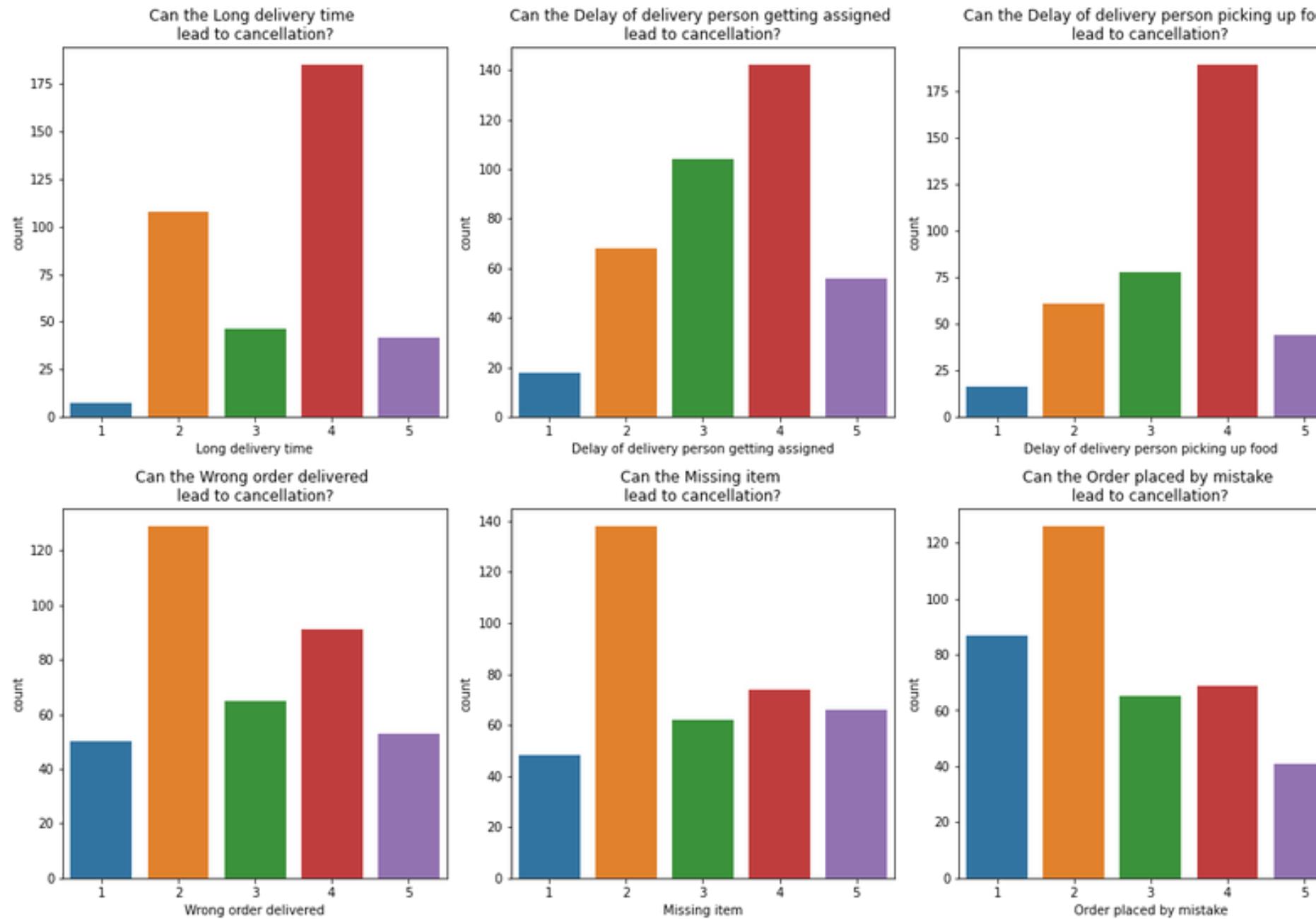
Exploratory Data Analysis (EDA)



What Conditions Keep Respondents From Using Online Food Delivery?

1. Self-cooking is the main reason for not using online delivery (4 - Agree).
2. Health concerns are divided (4 - Agree, 2 - Disagree).
3. Late delivery is a significant deterrent.
4. Hygiene is not a top concern (2 - Disagree vs. 4 - Agree).
5. Bad past experiences, unavailability, and affordability are not major issues.

Exploratory Data Analysis (EDA)

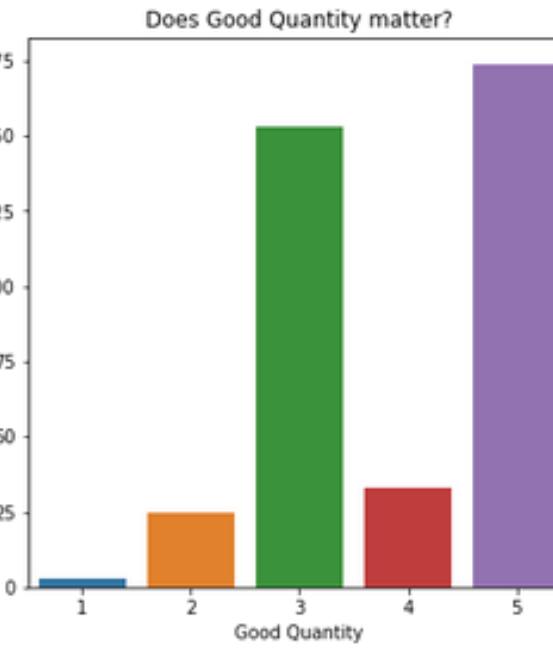
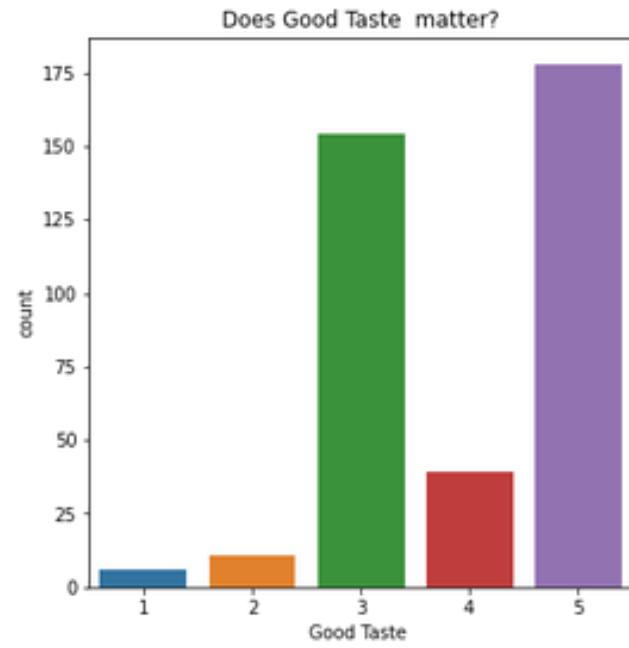
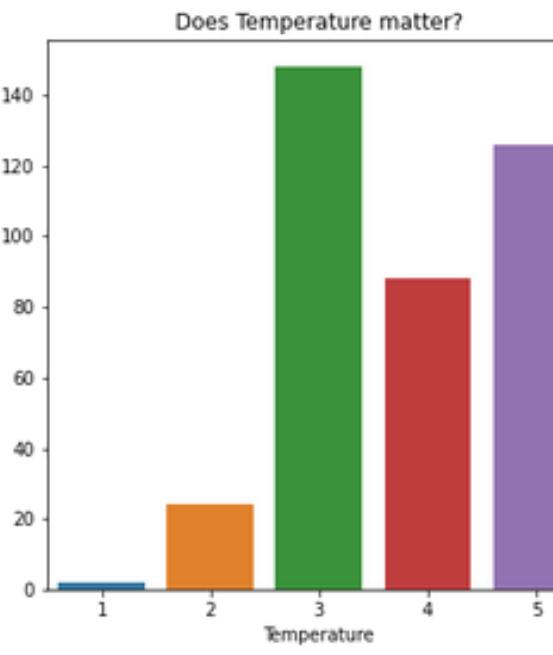
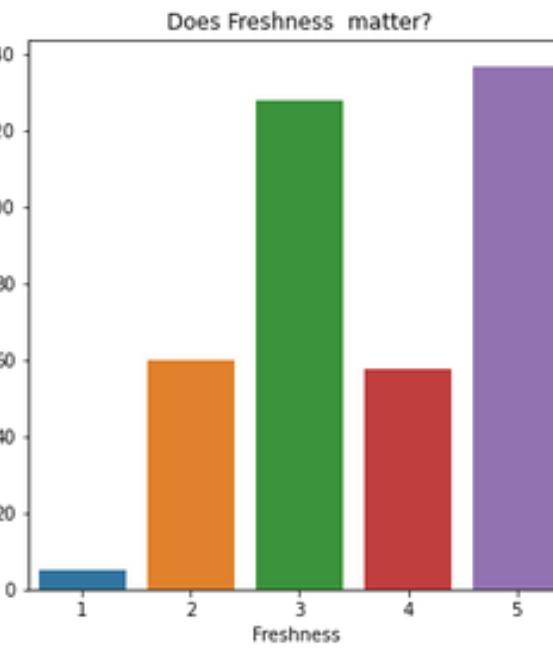
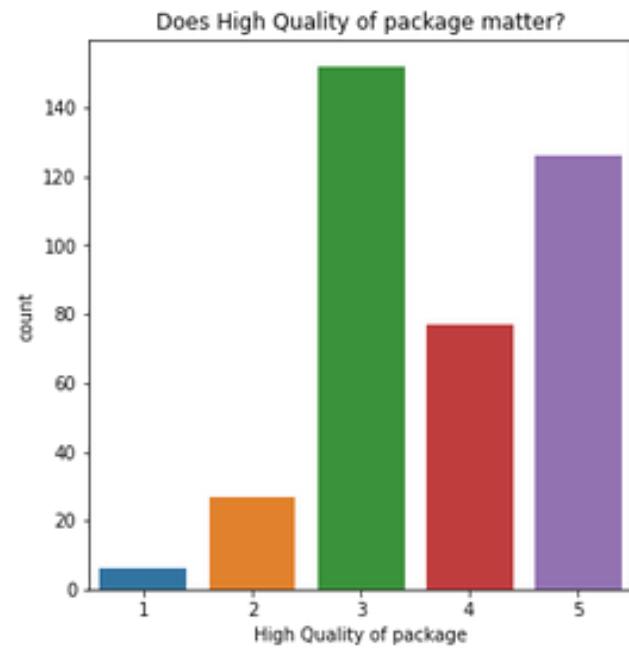


What Event Make Respondents Cancel the Online Food Delivery?

Something related to time is the most reason why respondents cancel the order, such as the length of time for delivery, the length of time the delivery person gets assigned, and the length of time the delivery picks up the food. As for matters relating to errors in ordering/delivery, it is not something that causes cancellations such as wrong order delivered, missing item in the food ordered, and order placed by mistake.

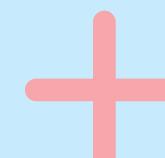
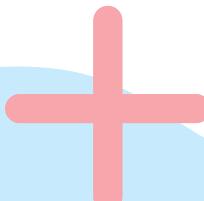


Exploratory Data Analysis (EDA)



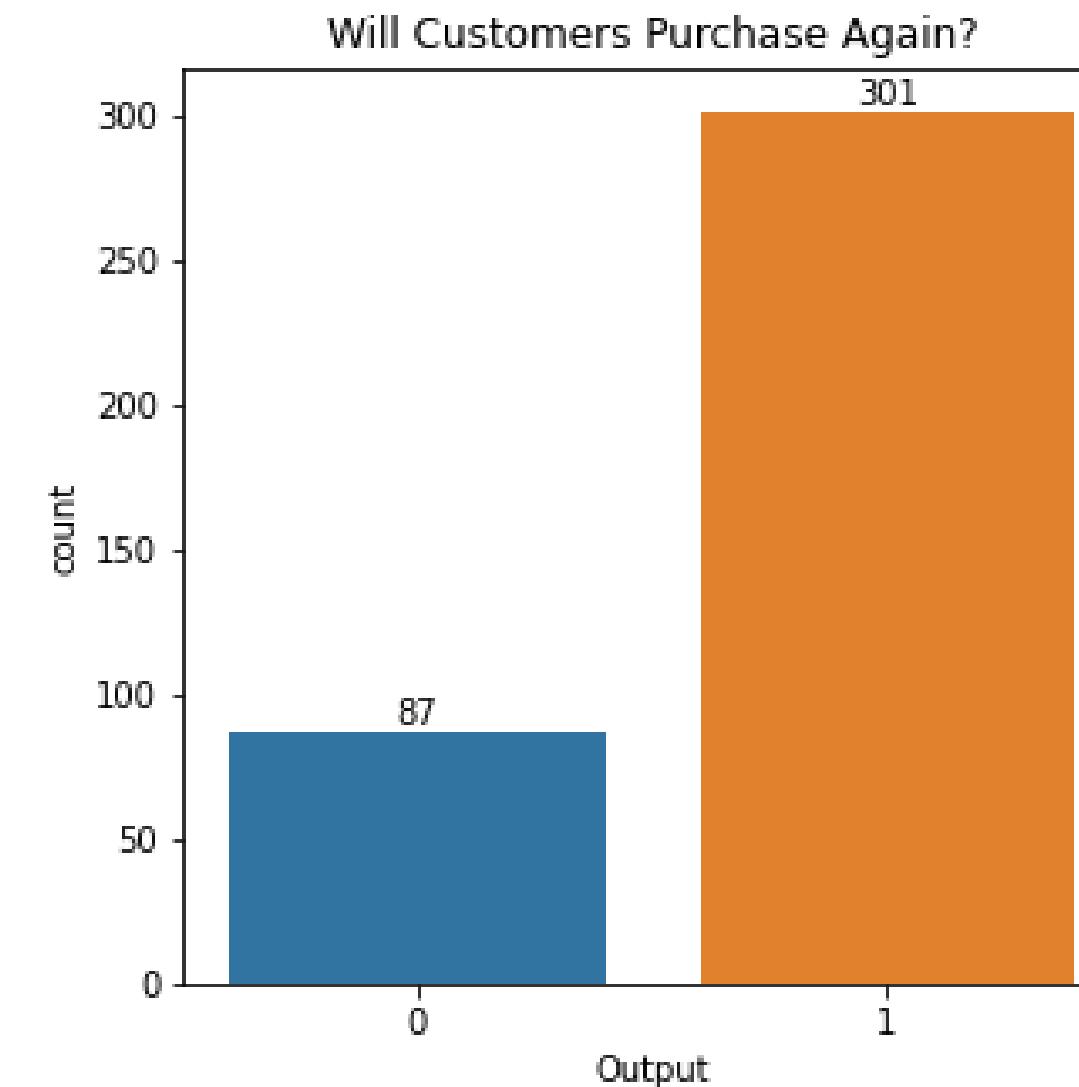
Is This Food-Related Thing Important?

Most respondents don't care about the package and Temperature of the food but they care about the Freshness of the food, Taste of the food, and Quantity of the food



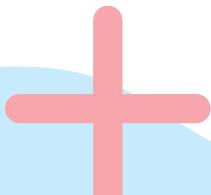


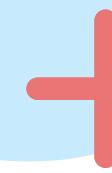
Exploratory Data Analysis (EDA)



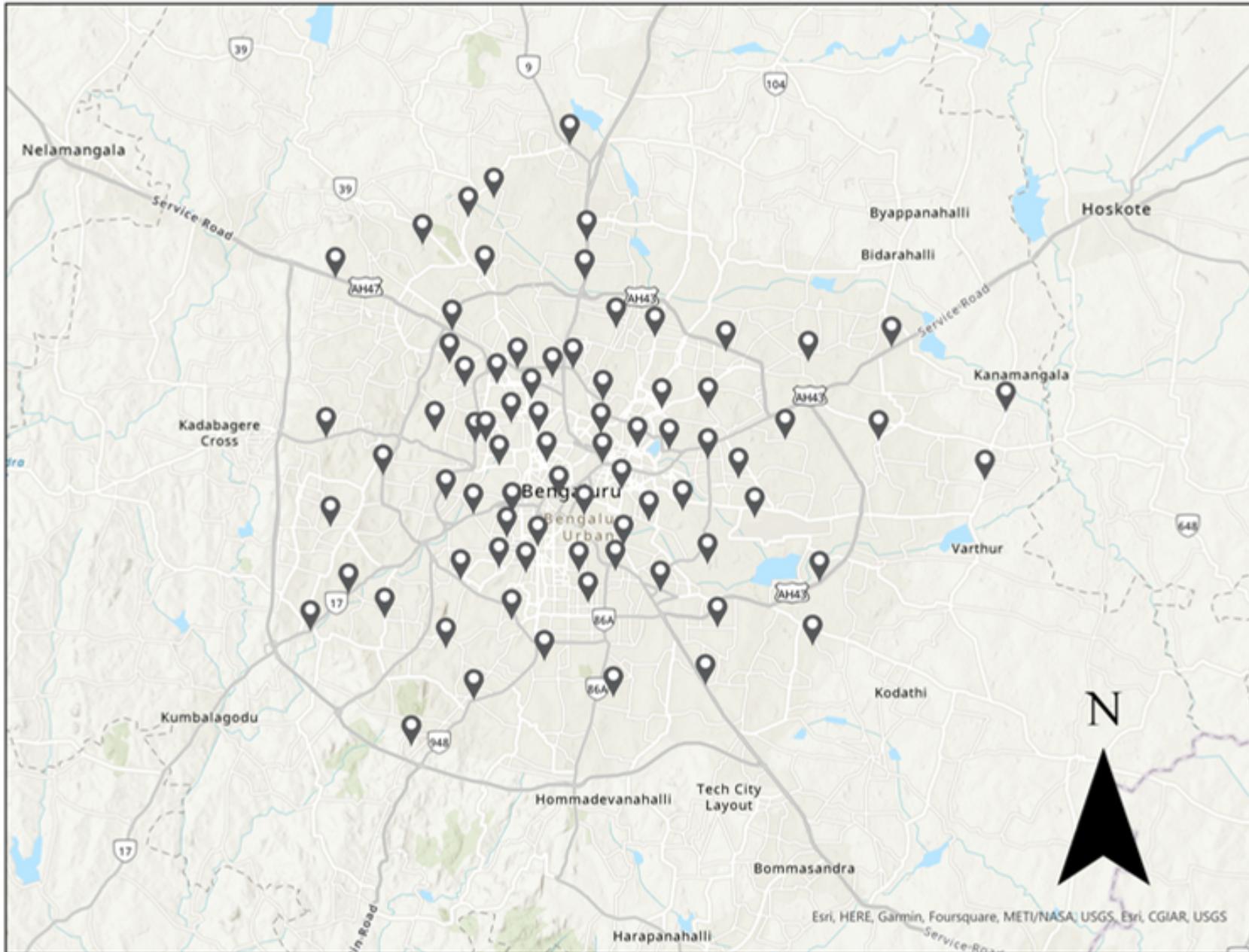
The Number Of Respondents Who Will Use Online Food Delivery Again

From the graph, we know that 87(22%) respondents will not purchase again and it's quite high



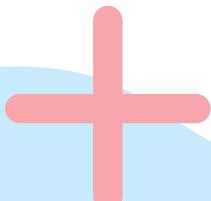


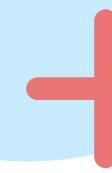
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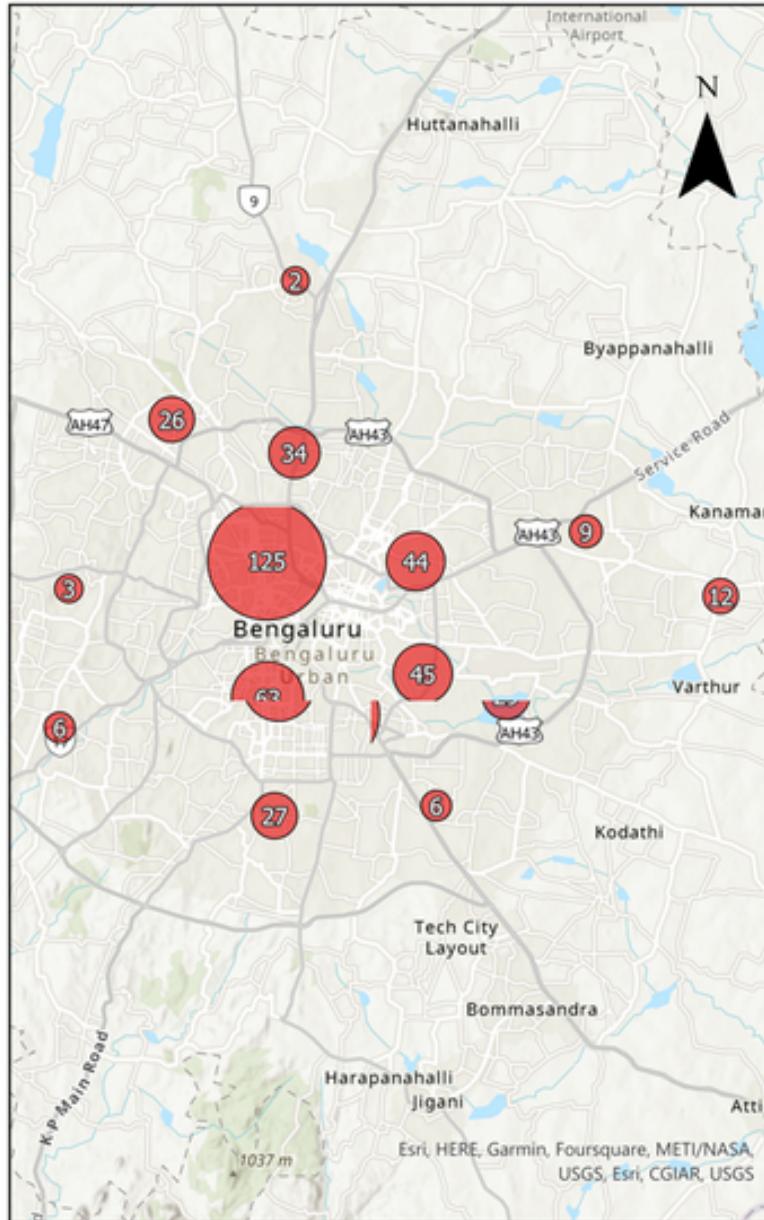
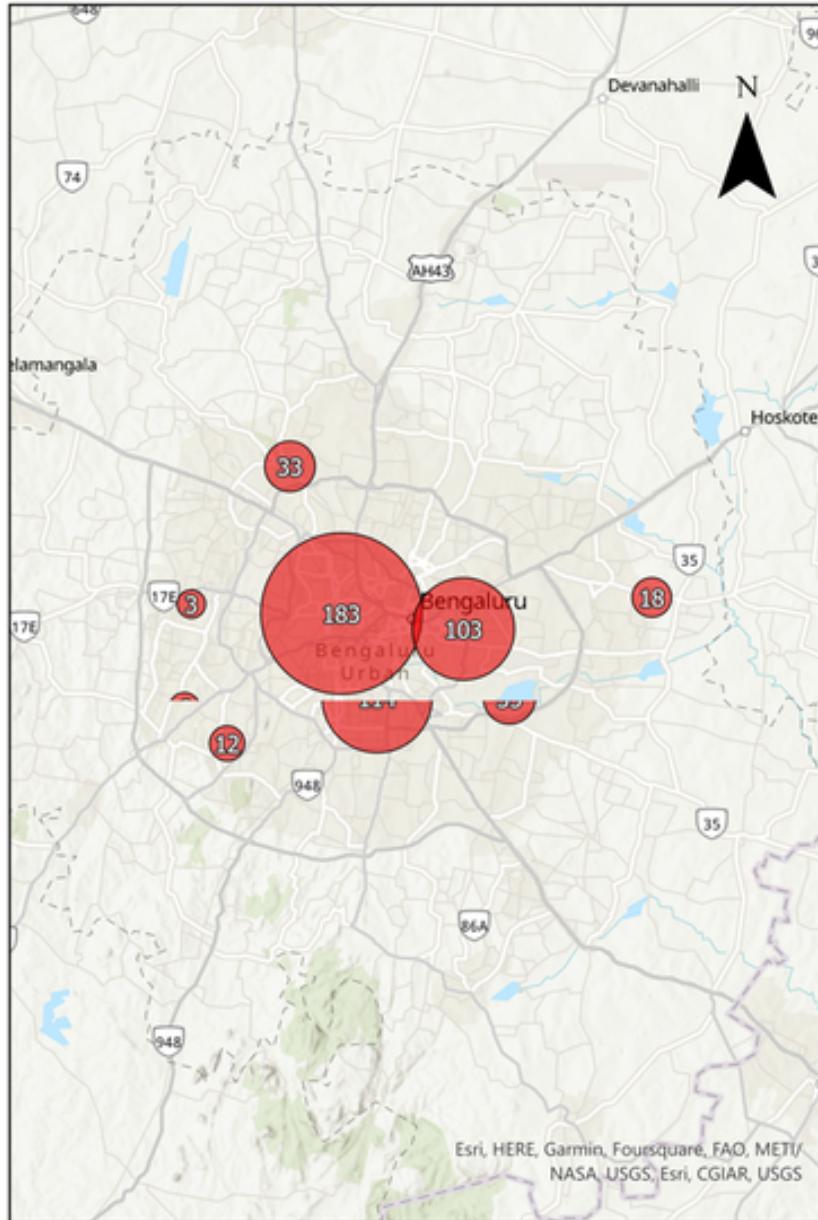
Geo Pointers:

We have considered the Age band of 18-40 to get the maximum pointers for this plot. As you can see, we have collected data across all the places inside the Bangalore Urban and also the outskirts of the city which makes the data more reliable for its findings. Most of the data are concentrated much on the Bangalore Urban (inside the city).



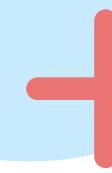


Exploratory Data Analysis (EDA)

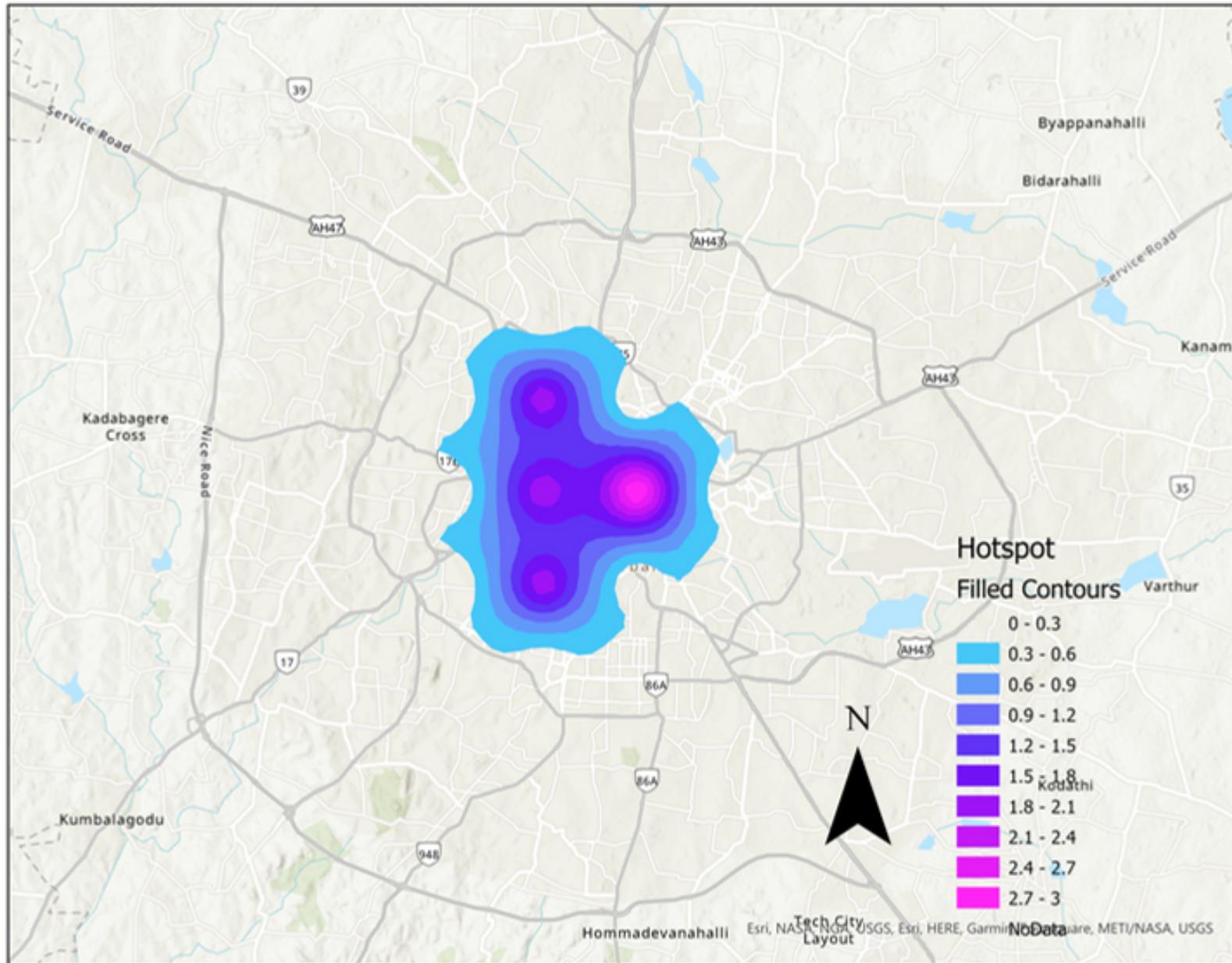


Clustered Location:

Most of the data are concentrated in the heart of city- which includes places like Gandhinagar, Chikkapete, VVPuram, Rajajinagar. The next highest data cluster is recorded in South Bangalore where JP Nagar, Madiwala and Koramangala are located. We have also collected nearly 18 responses from Whitefield which is located in the outskirts of Bangalore.

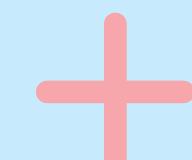
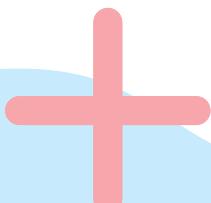


Exploratory Data Analysis (EDA)



Hotspot Analysis:

A prominent finding is that the primary customer base for online food delivery services is concentrated in the central areas of Bangalore. This spatial insight indicates a dense clustering of demand around the city's core, suggesting that food delivery platforms should strategically focus their resources and services in these central zones. Understanding this geographic distribution is crucial for optimizing delivery routes, service coverage, and marketing efforts, ultimately leading to more efficient and targeted service provision. These findings not only enhance our understanding of customer behaviour but also provide actionable insights for service providers in catering to the core customer base in the heart of Bangalore.



MODEL SELECTION

Why we choose Random Forest?



Model Selection:

Random Forest chosen for its ability to handle complex data relationships, provide precise predictions in classification tasks, and mitigate overfitting.

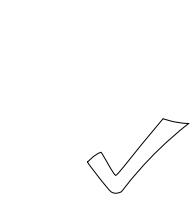


Data Diversity

Random Forest's versatility in handling various input variable types (categorical and continuous) suits the multifaceted dataset.



Robust Predictions



By aggregating insights from multiple decision trees, Random Forest builds a strong predictive model for data with intricate interactions and non-linear dependencies.

MODEL

The Random Forest Classifier (RFC) model for predicting consumer meal reorders demonstrates strong performance:

Confusion Matrix:

```
[[14  3]
 [ 1 60]]
```

Accuracy Score:

0.9487179487179487

Classification Report:

	precision	recall	f1-score	support
0	0.93	0.82	0.87	17
1	0.95	0.98	0.97	61
accuracy			0.95	78
macro avg	0.94	0.90	0.92	78
weighted avg	0.95	0.95	0.95	78



Accuracy Score:

The model achieves an accuracy score of approximately 94.87%, indicating a high level of correct predictions.



Precision and Recall:

High precision (around 0.88) and recall (around 0.97) values for both classes reveal the model's ability to make accurate predictions and capture most relevant instances.



F1-Score

F1-scores of approximately 0.88 and 0.97 reflect a balanced performance in terms of precision and recall.

Feature Importance Analysis for Online Food Delivery



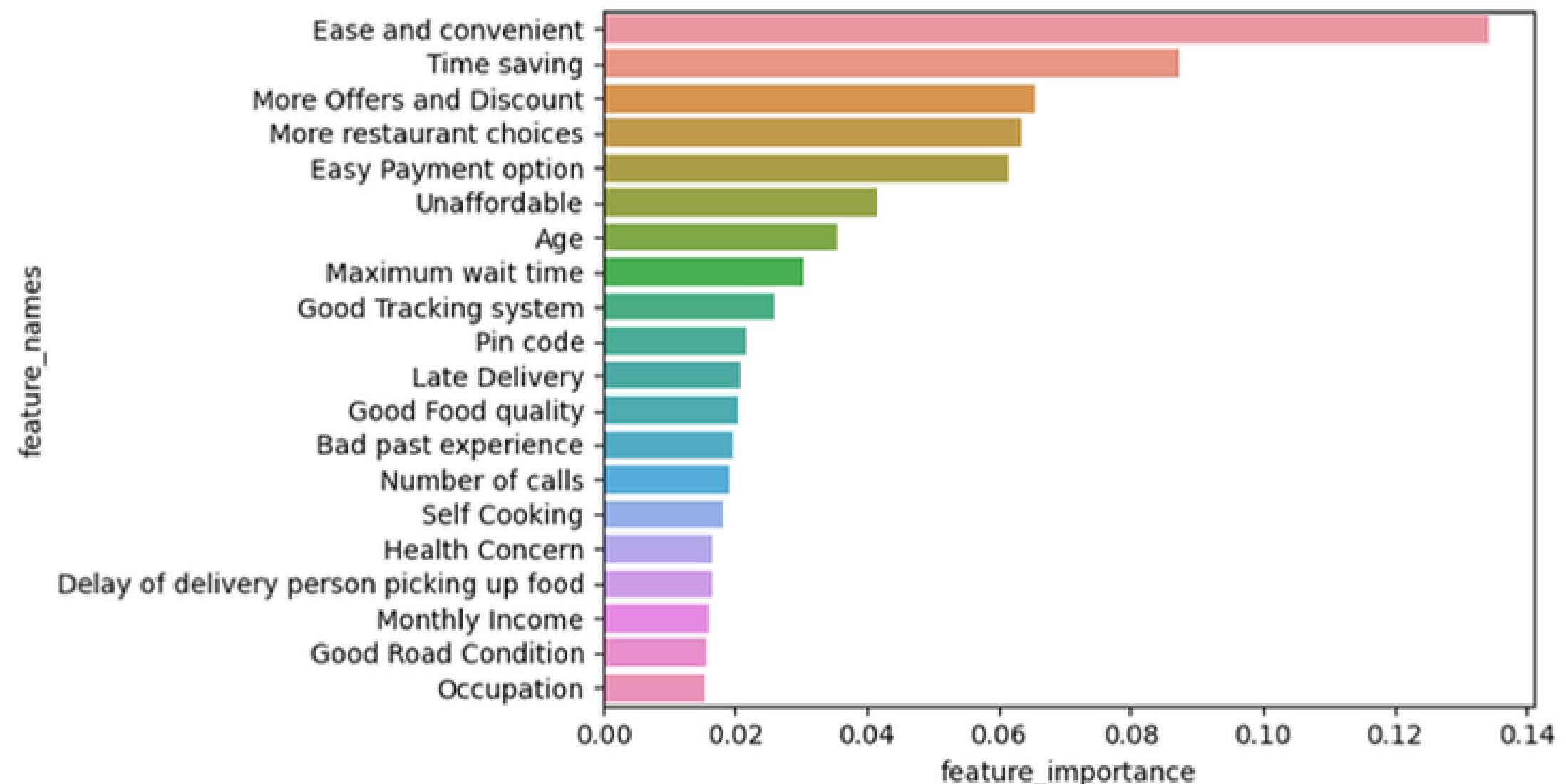
Identifying Crucial Factors

We analyzed our Random Forest model to identify the most influential factors affecting consumer behavior in online food delivery.



Strategic Insights

This analysis guides resource allocation and tailored improvements to optimize online food delivery services, meeting specific consumer needs and preferences.



Conclusion

"Data-Driven Insights for Enhanced Competitiveness in Bangalore's Online Food Delivery Market" - This study provides actionable insights to boost customer satisfaction and retention, empowering industry stakeholders to adapt and succeed in a dynamic online food delivery landscape.



Result

- Respondents are influenced by improvements in app usability, time-saving, restaurant choices, and discounts for online food delivery.
- Health concerns and hygiene are mixed, but late delivery is a significant deterrent.
- Time-related issues drive order cancellations, while order errors are less common.
- Most prioritize food freshness, taste, and quantity.
- 22% of respondents are hesitant to repurchase, highlighting room for improvement.
- Online food delivery demand is concentrated in central Bangalore areas.
- The Random Forest Classifier model achieved high accuracy and precision, making it reliable for predicting meal reorders.



WHAT IS

Future Scope

Continuously improve service for increased customer convenience and satisfaction.

Service Enhancement:

Train delivery staff to reduce late deliveries and excessive customer calls by enhancing their knowledge of service a

Delivery Personnel Training:

Offer attractive offers and discounts to make online food delivery more affordable for a wider audience.

Promotions and Discounts:

Prioritize faster food delivery to cater to time-sensitive customers, particularly employees.

Speed Optimization:

Expand restaurant options to offer customers more choices.

Restaurant Expansion:

Launch marketing campaigns to encourage occasional self-cookers to use online food delivery once a week.

Self-Cooking Promotion:



**Thank you for
listening!**