Delivery Time Estimation Report

Objective The objective of this assignment is to build a regression model that predicts the delivery time for orders placed through Porter. The model will use various features such as the items ordered, the restaurant location, the order protocol, and the availability of delivery partners. The key goals are:

- Predict the delivery time for an order based on multiple input features
- Improve delivery time predictions to optimize operational efficiency
- Understand the key factors influencing delivery time to enhance the model's accuracy

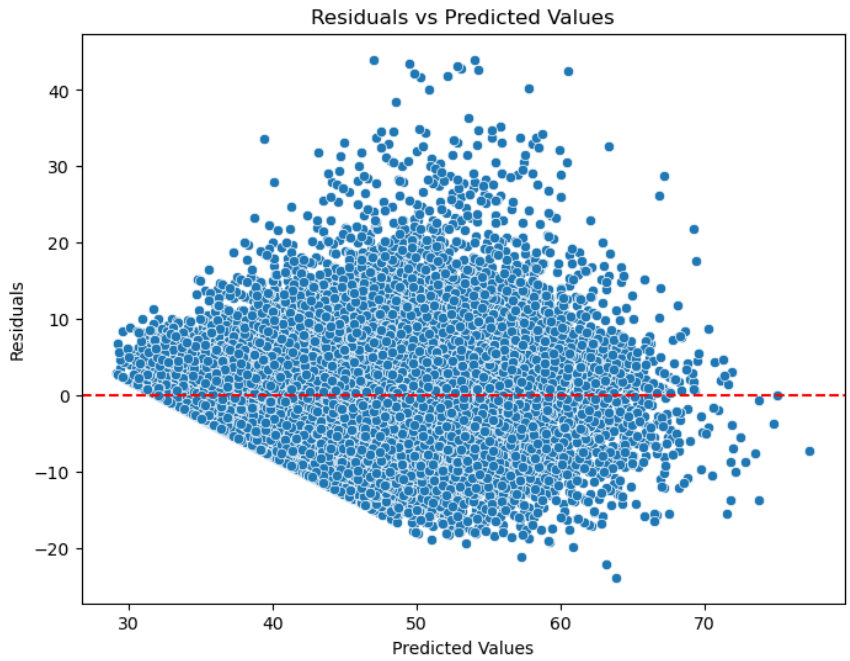
Data Exploration The dataset was analyzed for missing values, outliers, and correlations between features. Key findings include:

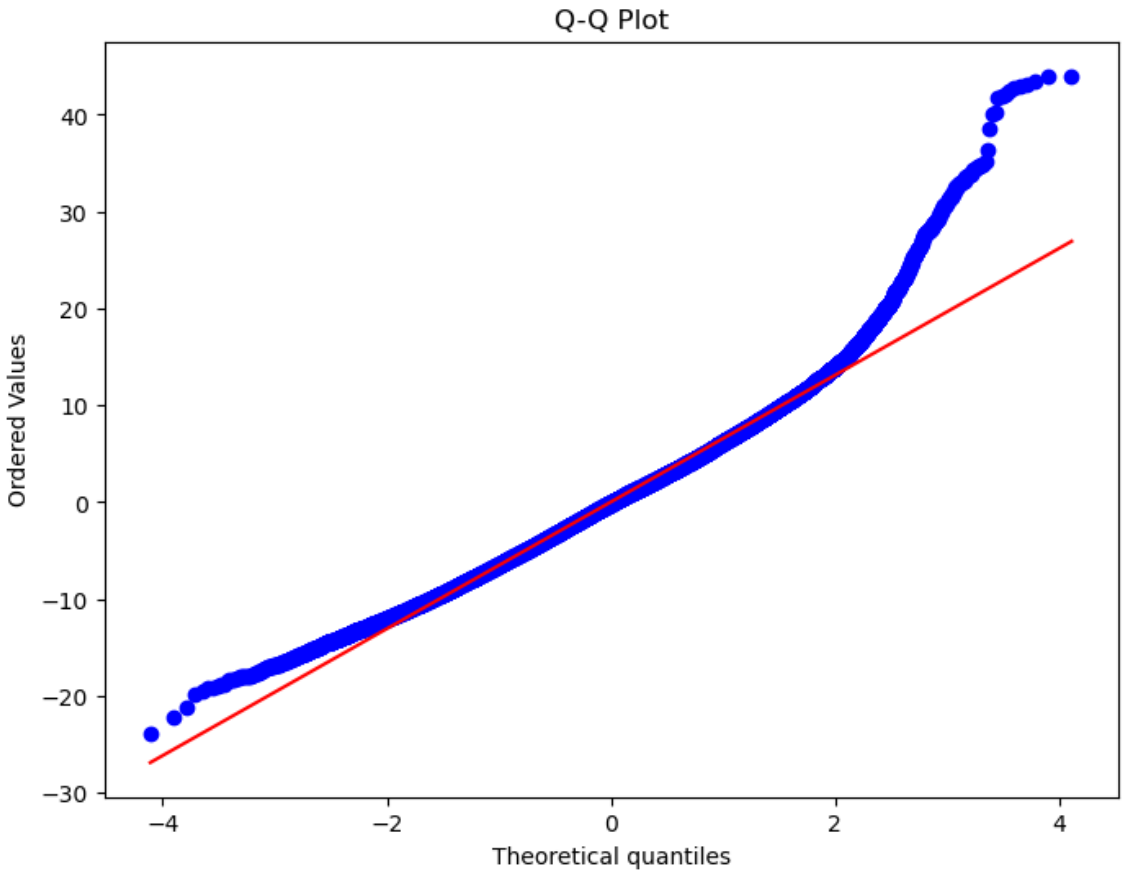
- Distribution of delivery times
- Relationship between order volume and delivery time
- Impact of dispatch time on estimated delivery duration

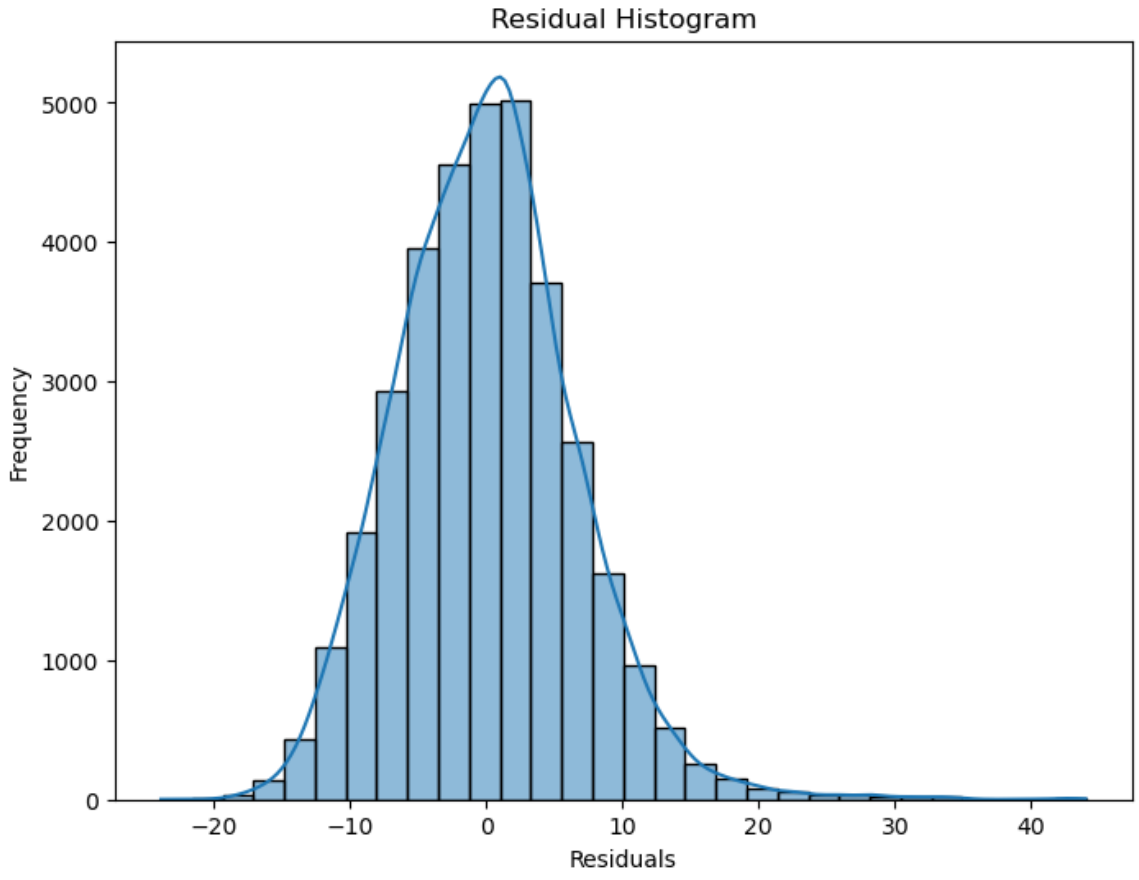
Model Development A linear regression model was implemented to predict delivery times. Steps included:

1. Data preprocessing (handling missing values, feature engineering)
2. Splitting data into training and test sets
3. Model training and evaluation using metrics such as R-squared and Mean Absolute Error (MAE)

Residual Analysis




Q-Q Plot
Ordered Values
Theoretical quantiles
40
30
20
10
0
−10
−20
−30
−4
−2
0
2
4


Residual Histogram
Frequency
Residuals
5000
4000
3000
2000
1000
0
−20
−10
0
10
20
30
40

Results and Insights

- Key features influencing delivery time were identified.
    - Distance
    - Subtotal
    - Total Outstanding Orders

Conclusion This report provides an overview of the delivery time estimation process. Future enhancements could include additional features, alternative regression models, and optimization techniques.