



# MOBILE PRICE CLASSIFICATION

## Introduction

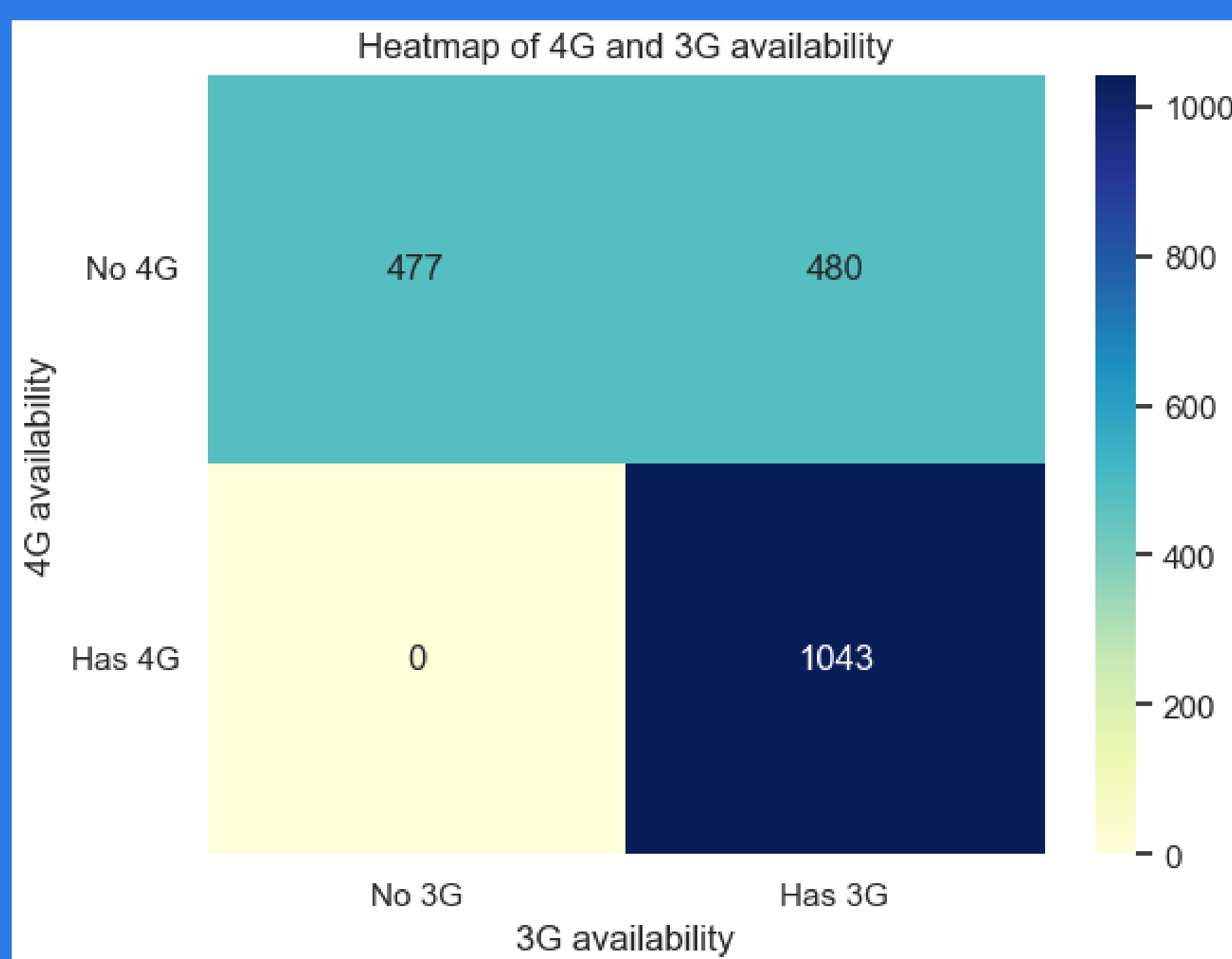
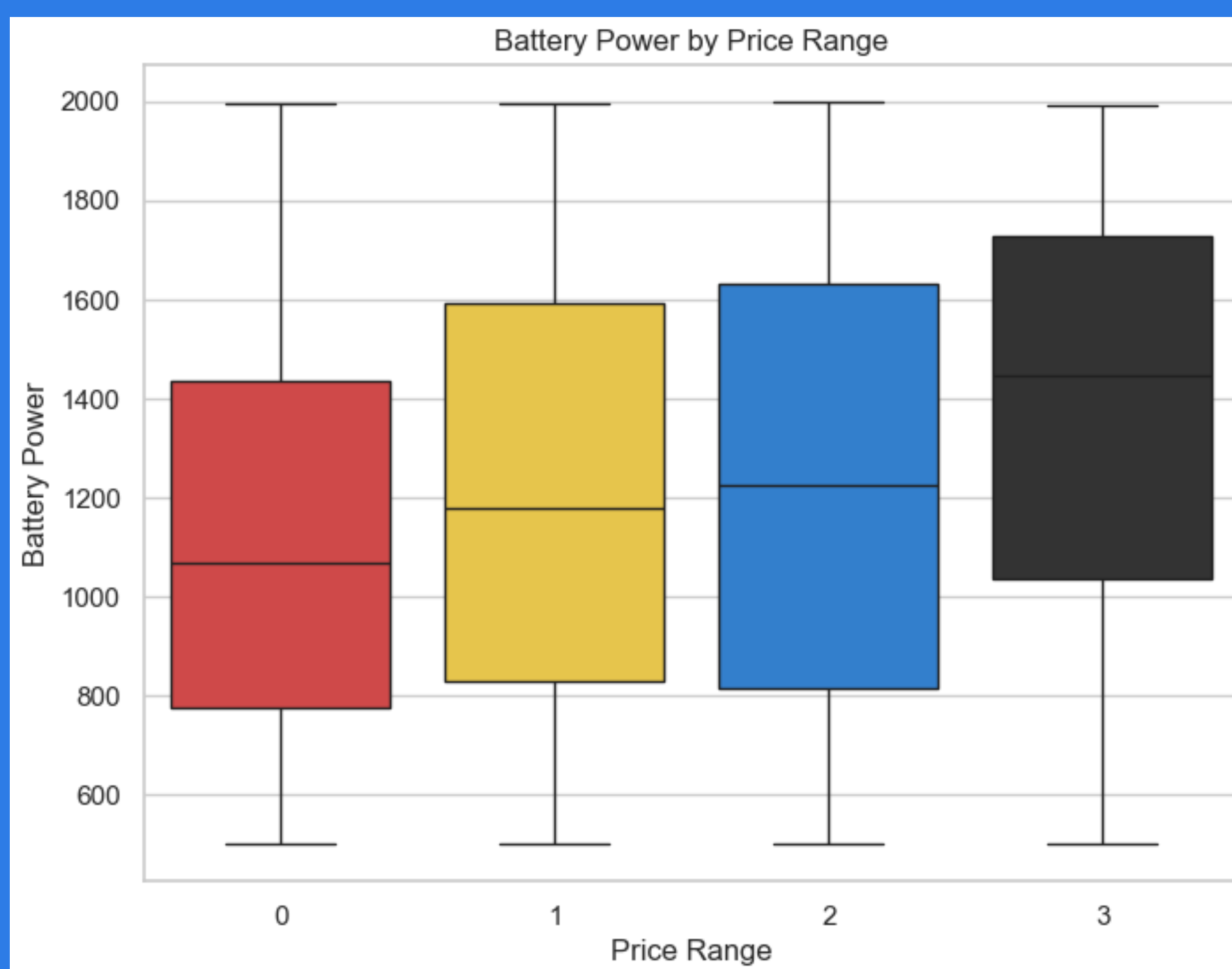
The mobile phone market is dynamic and diverse, offering a wide array of devices with varying features and price ranges. Predicting phone prices is vital for understanding market trends and helping consumers make informed choices. By utilizing machine learning (ML) algorithms, we aimed to develop a predictive model that accurately classifies mobile phone prices based on various features, facilitating better market understanding and consumer decision-making.

## Web Scarping

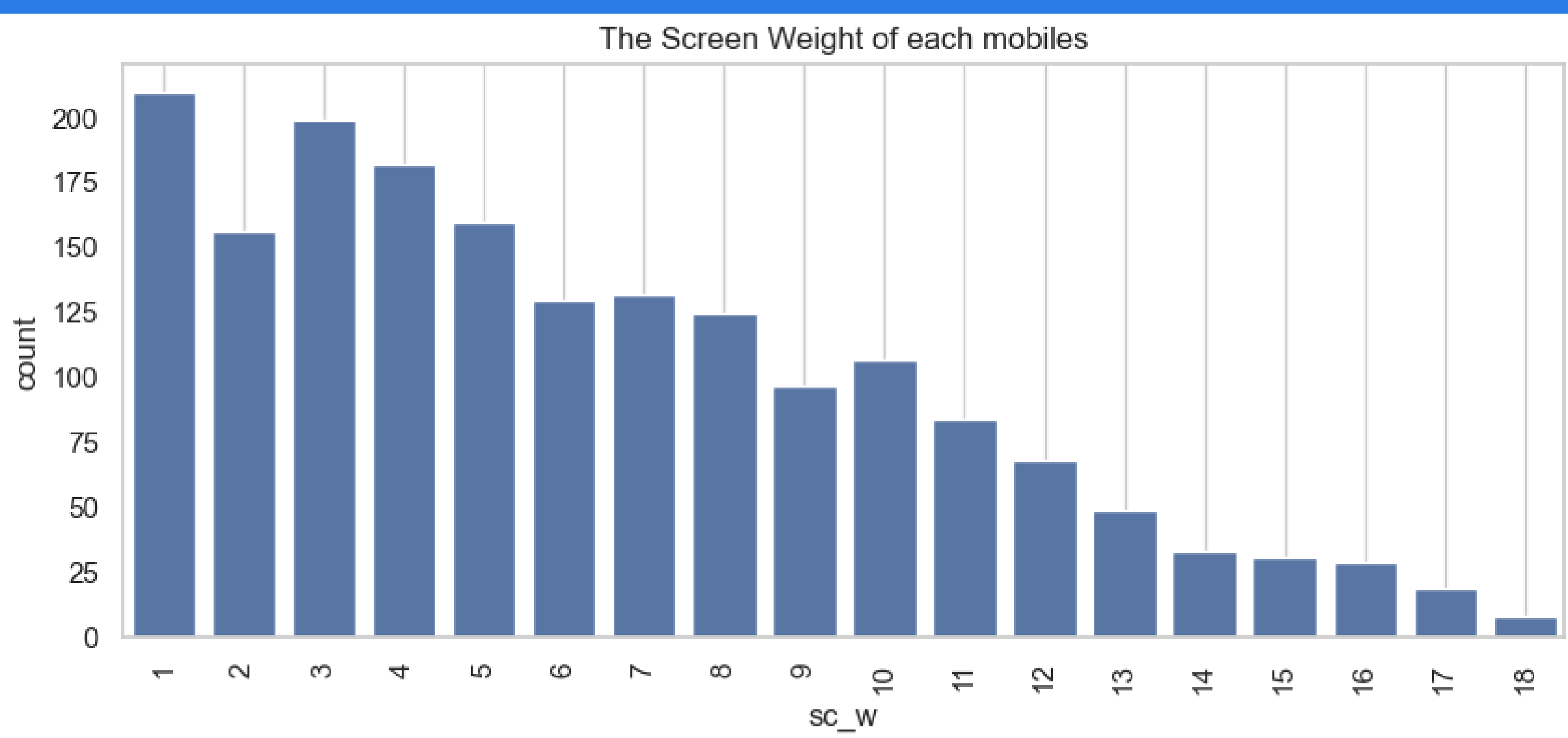
Category	Price From	Price To
1	14.5	169.7
2	169.7	333.9
3	333.9	728
4	728	2269

## Data

- The data was obtained from Kaggle, comprising a training dataset of 2000 entries with 20 attributes.
- The model aimed to predict the price range, a categorical variable spanning four values (0, 1, 2, 3).
- Eliminated rows with 'sc\_w' (screen width) and 'px\_height' (pixel height) values equal to 0 from the dataset to ensure data integrity and accuracy in the analysis.
- Engineered new features 'network\_type' based on mobile network support and 'diagonals' calculated from screen height and width, providing additional insights for analysis.

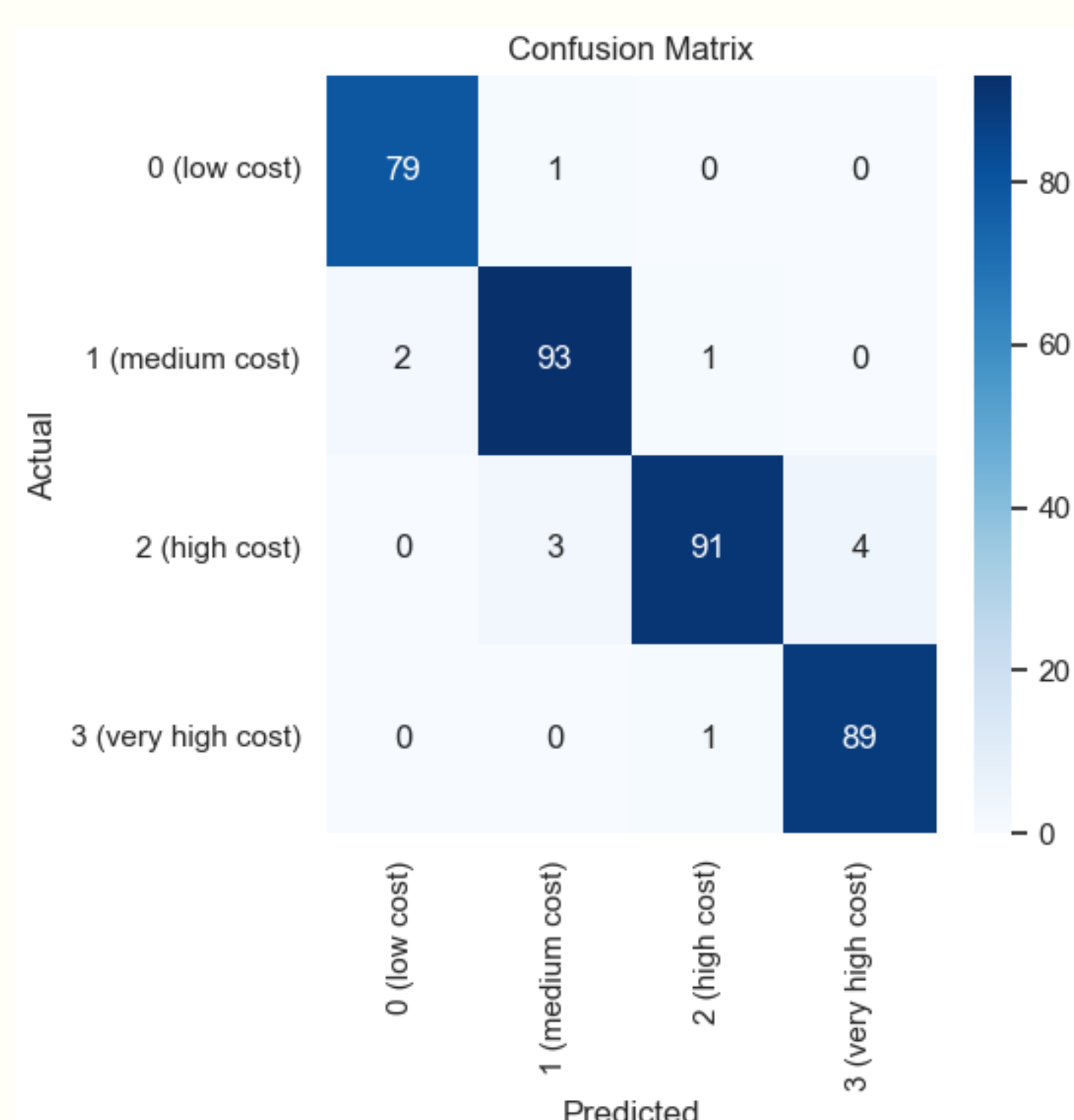


Web scraping from the Hinnavaatlus website collected mobile phone prices in Estonia. Categorized into four price ranges based on quartiles.



## Results

We found that the Support Vector Machine (SVM) model with a linear kernel provided the best fit to our dataset. The model was instantiated using the SVC class from scikit-learn with specific parameter values, namely C=11 and kernel='linear'.



## Model building

We selected machine learning algorithms such as Decision Trees, Random Forest, k-Nearest Neighbors (KNN), Support Vector Machines (SVM), and Neural Networks based on their adaptability to diverse data, capacity to prevent overfitting, and capability to discern complex data patterns. Our choices were aligned with the dataset's characteristics and optimized for the classification task at hand.

MSE	Accuracy	Precision	Recall	F1 Score
0.0330	0.9670	0.9673	0.9670	0.9669