**Code Result**

**Imported Libraries**

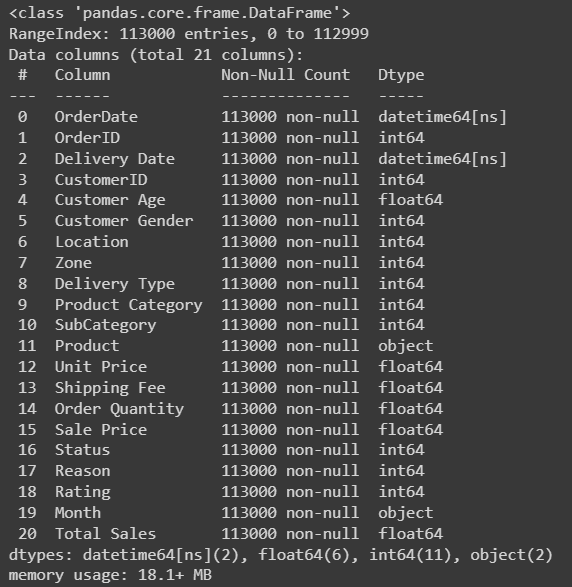
Pandas, Numpy, Matplotlib, plotly, Voting Regressor, AdaBoost Regressor, RandomForest Regressor, XGBoost Regressor, train\_test\_split, GradientBoosting Regressor

**Pre-Processing:**

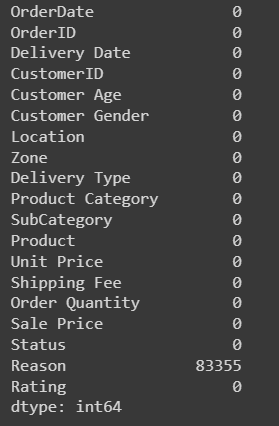
1. Check Shape of the Data



1. Info



1. Checking Null Values

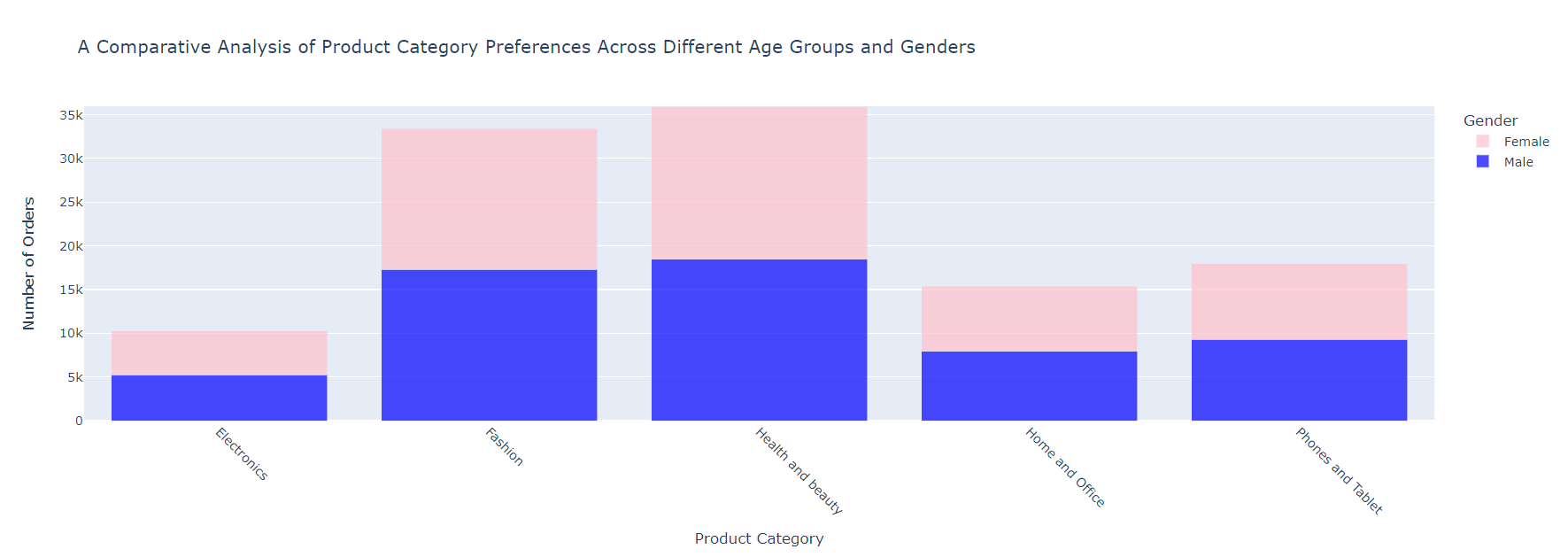


**EDA**

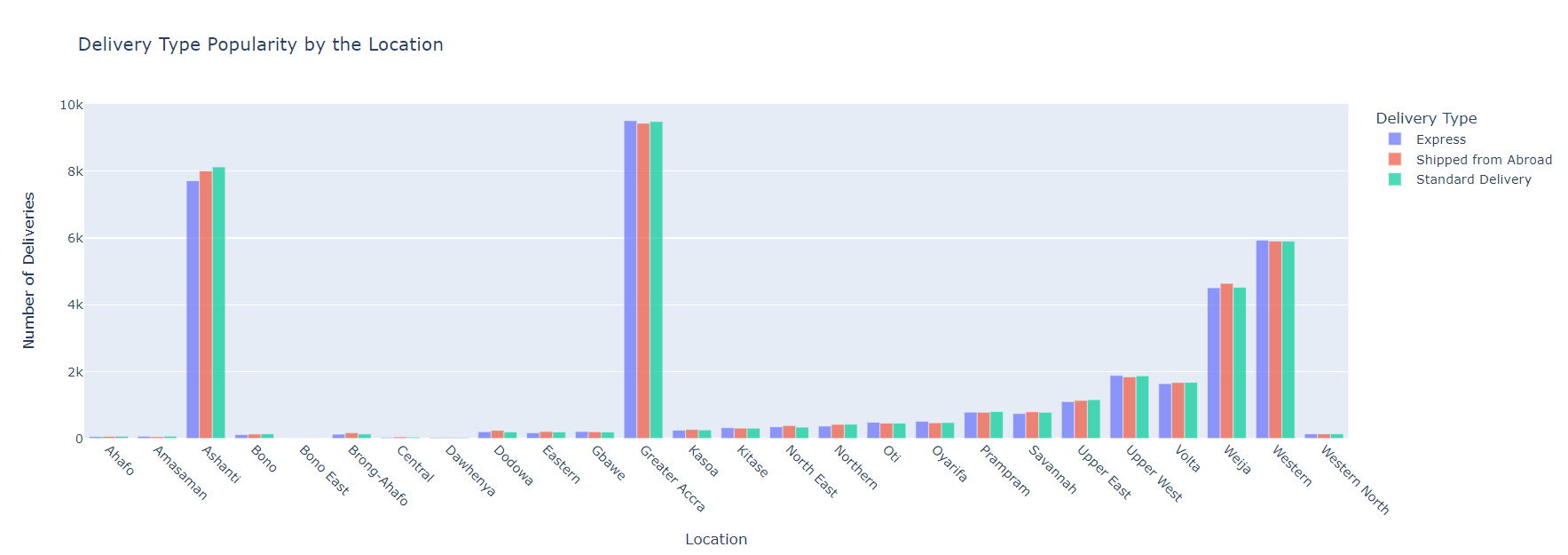
1. Line Plot for Month v/s No. of orders Placed



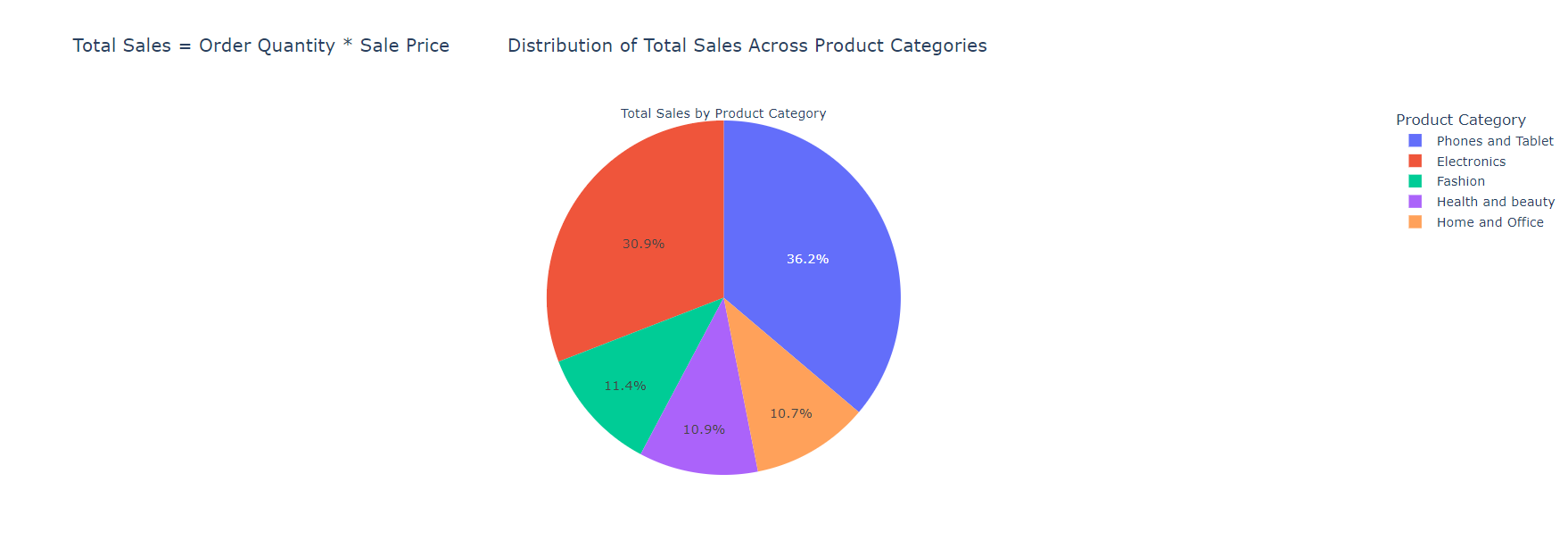
1. A Comparative Analysis of Product Category Preferences Across Different Age Groups and Genders



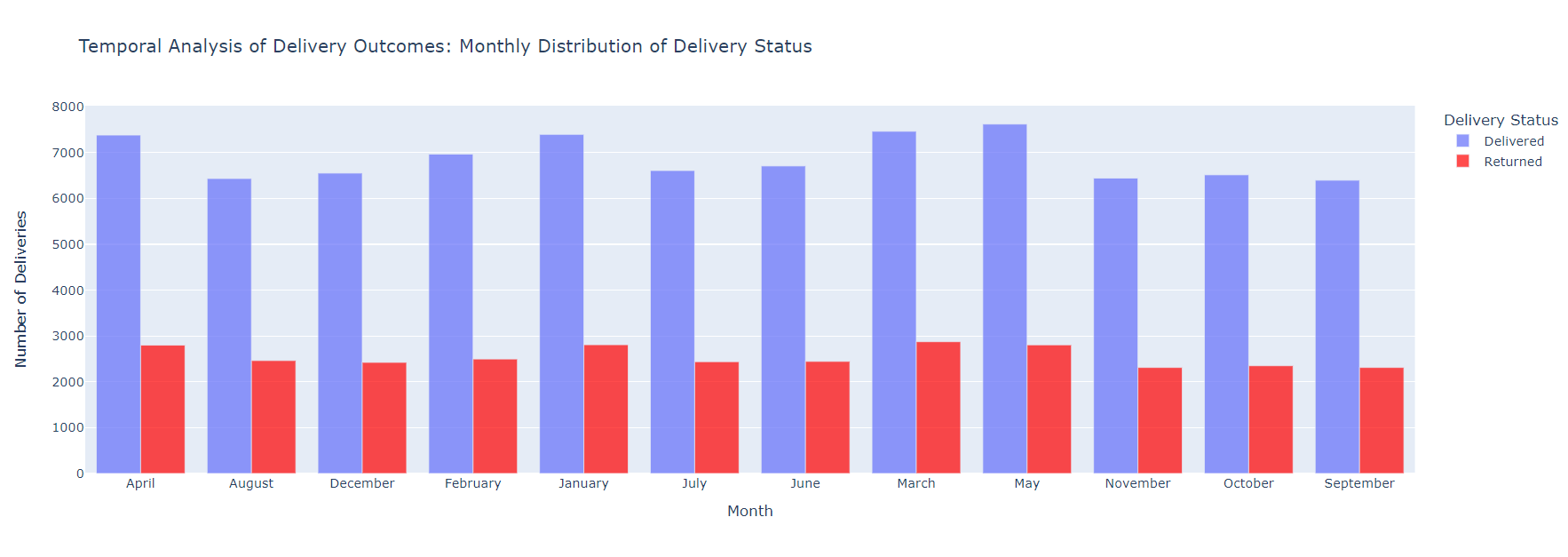
1. Delivery Type Popularity by the Location

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1. Total Sales by Product Category

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1. Temporal Analysis of Delivery Outcomes: Monthly Distribution of Delivery Status

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**Train Test Splitting:**

Using the train\_test\_split function from sklearn to split our dataset into training and testing sets. The test\_size parameter is set to 0.25, meaning that 25% of the data will be used for the test set and the remaining 75% for the training set.

x  
For reproducibility, the random state parameter is set to 42. The training and testing sets that are obtained are saved in X\_ecom\_train, X\_ecom\_test, y\_ecom\_train, y\_ecom\_testfor Y.

**Data**

We apply 3 different Individual Machine Learning Models on our dataset to get the accuracy and after that we make a voting ensemble for these three models

1. Random Forest Regressor

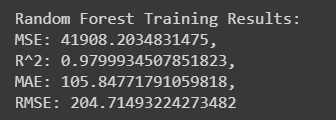
2. Adaboost Regressor

3. XGBoost Regressor

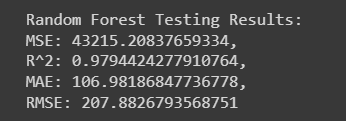
4. Voting Regressor

**Testing and Training results of Random Forest Regressor**

**Training MSE, R2, MAE and RMSE**



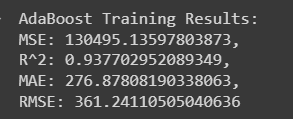
**Testing MSE, R2, MAE and RMSE**



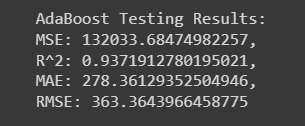
We got 97% testing R2.

**Testing and Training results of AdaBoost Regressor**

**Training MSE, R2, MAE and RMSE**



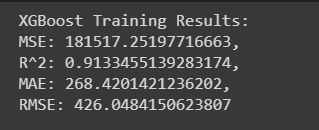
**Testing MSE, R2, MAE and RMSE**



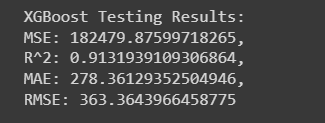
We got 93% testing R2.

**Testing and Training results of XGBoost Regressor**

**Training MSE, R2, MAE and RMSE**



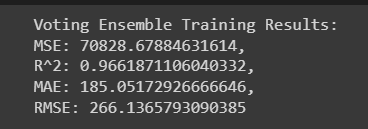
**Testing MSE, R2, MAE and RMSE**



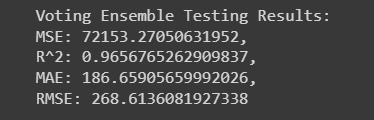
We got 91% testing R2.

**Testing and Training results of Voting Ensemble Regressor**

**Training MSE, R2, MAE and RMSE**



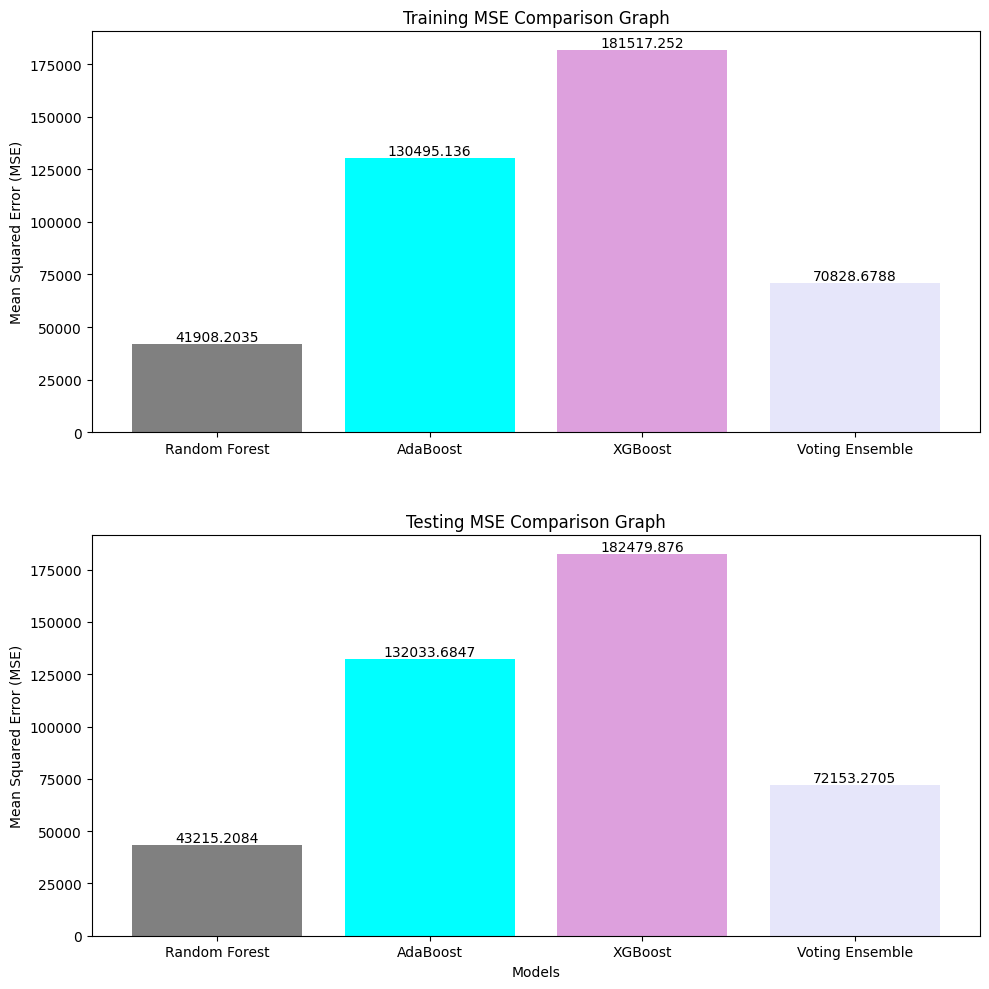
**Testing MSE, R2, MAE and RMSE**



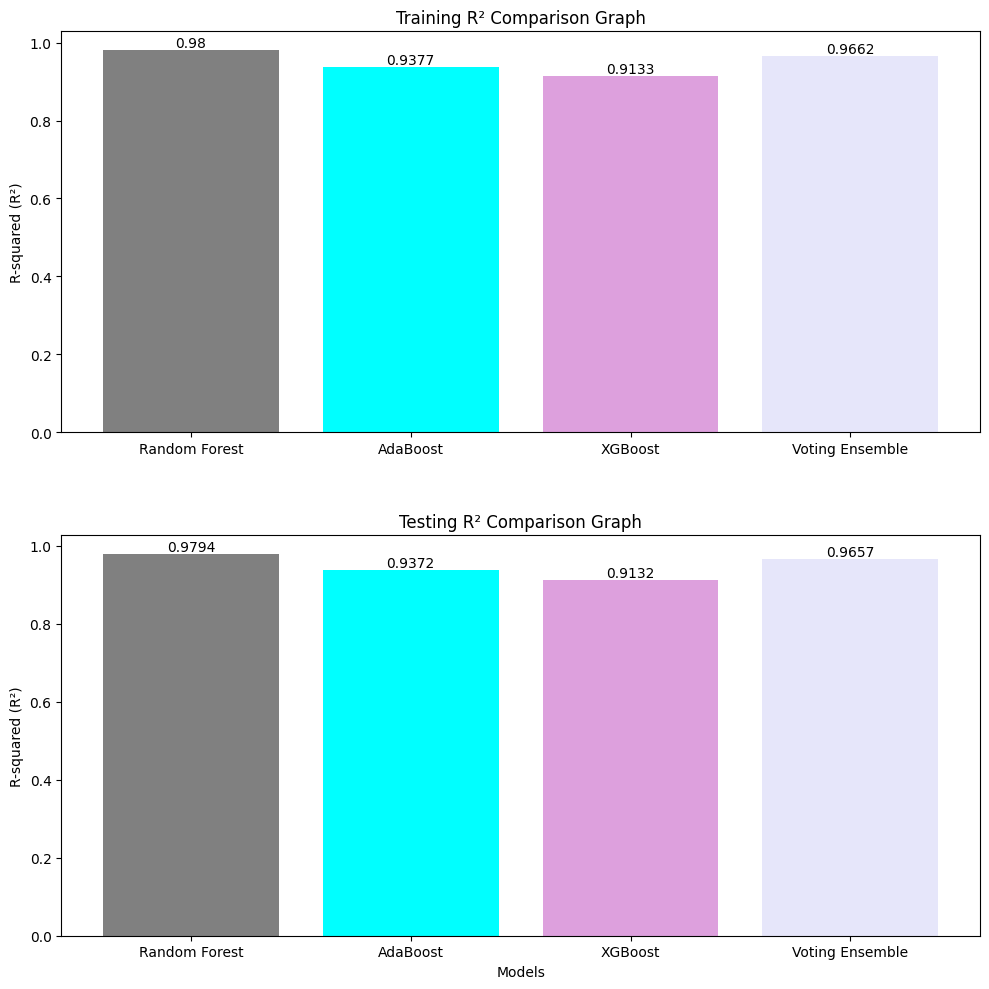
We got 96% testing R2.

**Model Comparison Graphs:**

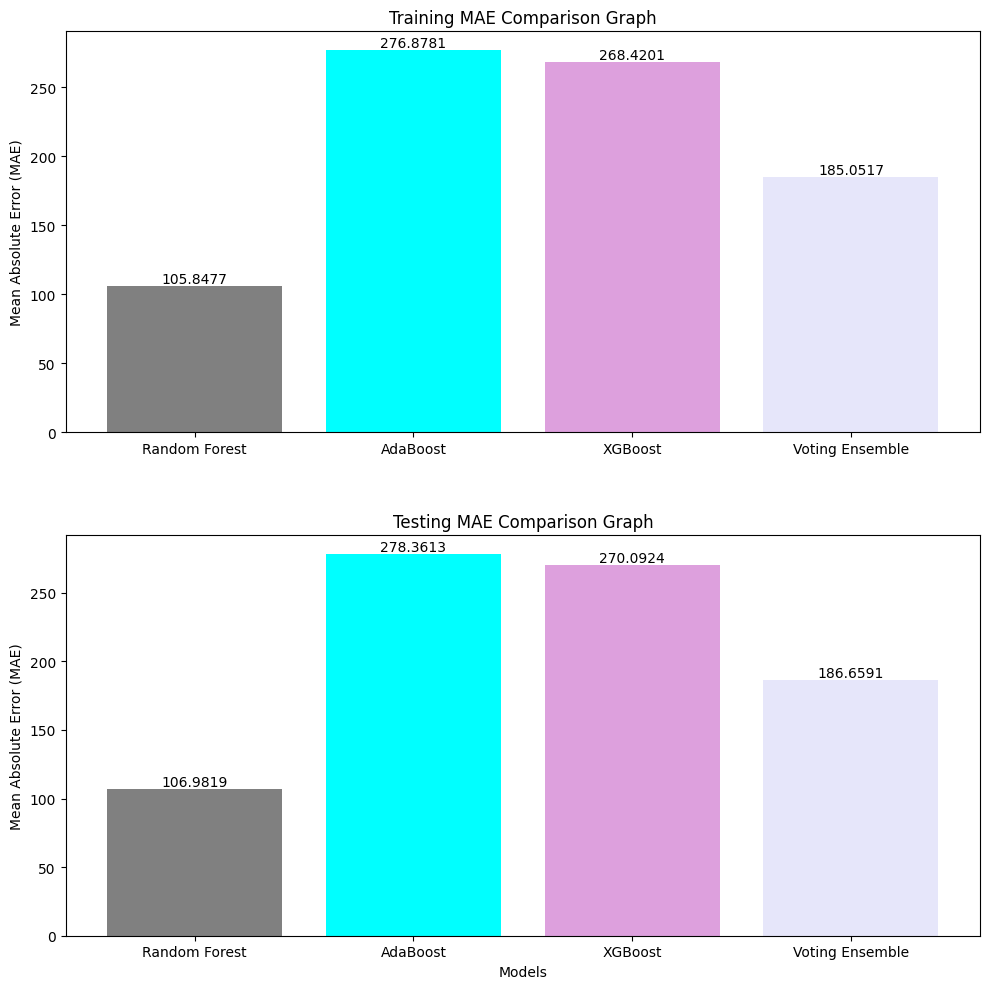
**1. MSE Comparison Graph**

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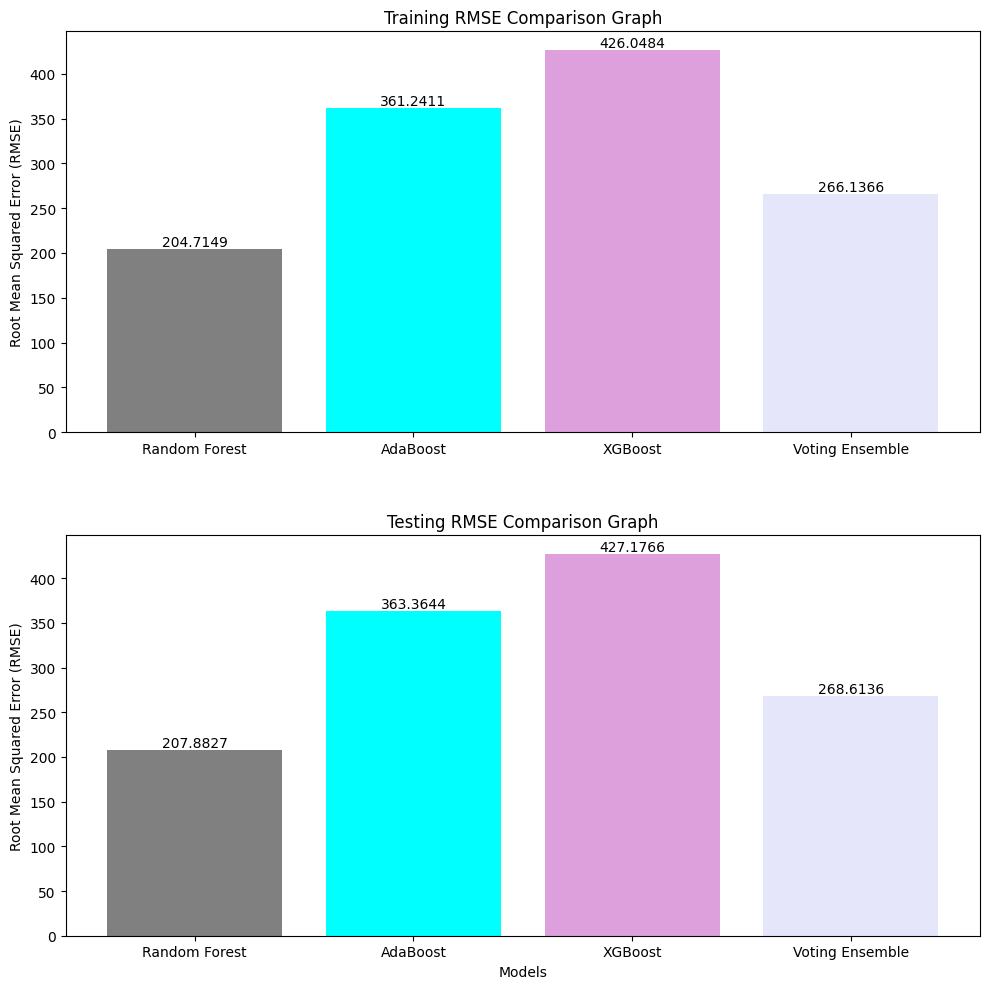
**2. R2 Comparison Graph**

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**3. MAE Comparison Graph**

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**4. RMSE Comparison Graph**

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