The final model features, parameters, hyperparameters, and performance:

The table below is a summary of the models' performance. Tuned XGB is the best model.

| Model | R-Square (Test Set) | MAE | MAPE (%) |
| --- | --- | --- | --- |
| Linear | 0.280 | 0.395 | 8.9 |
| GradientBoosting (GB) | 0.379 | 0.359 | 8.2 |
| Xtreme GB | 0.618 | 0.274 | 6.3 |
| RandomForest (RF) | 0.670 | 0.249 | 5.6 |
| Tuned GB | 0.714 | 0.235 | 5.4 |
| Tuned XGB | 0.728 | 0.226 | 5.2 |
| Tuned RF | 0.724 | 0.227 | 5.2 |

Base Model hyperparameters:

n\_estimators = 100

max\_depth = 6

learning\_rate = 0.3

colsample\_bytree = 1

colsample\_bylevel = 1

Tuned Model hyperparameters:

n\_estimators = 1800

max\_depth = 20

learning\_rate = 0.01

colsample\_bytree = 0.7

colsample\_bylevel = 0.4

