

# Model Performance Report: Random Forest

## MODEL DETAILS:

- Algorithm: Random Forest
- Training Samples: 141
- Test Samples: 36
- Features: 12

## PERFORMANCE METRICS:

- Root Mean Square Error (RMSE): 12.0005
- $R^2$  Score: 0.5186
- Mean Absolute Error (MAE): 7.3076
- Mean Square Error (MSE): 144.0110

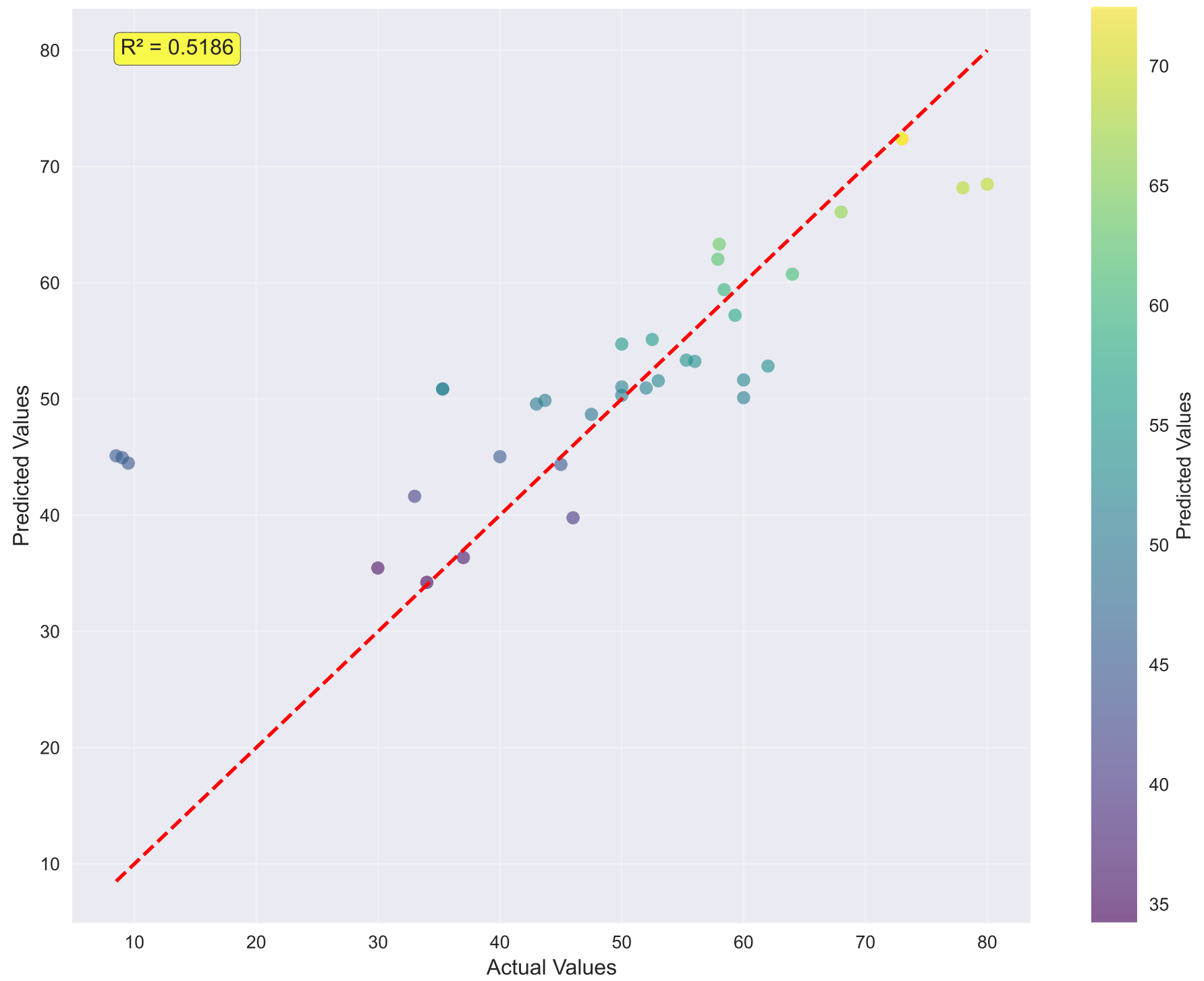
## INTERPRETATION:

- $R^2$  Score of 0.5186 means the model explains 51.86% of the variance
- RMSE of 12.0005 indicates average prediction error
- Lower RMSE and MAE values indicate better model performance
- $R^2$  closer to 1.0 indicates better model fit

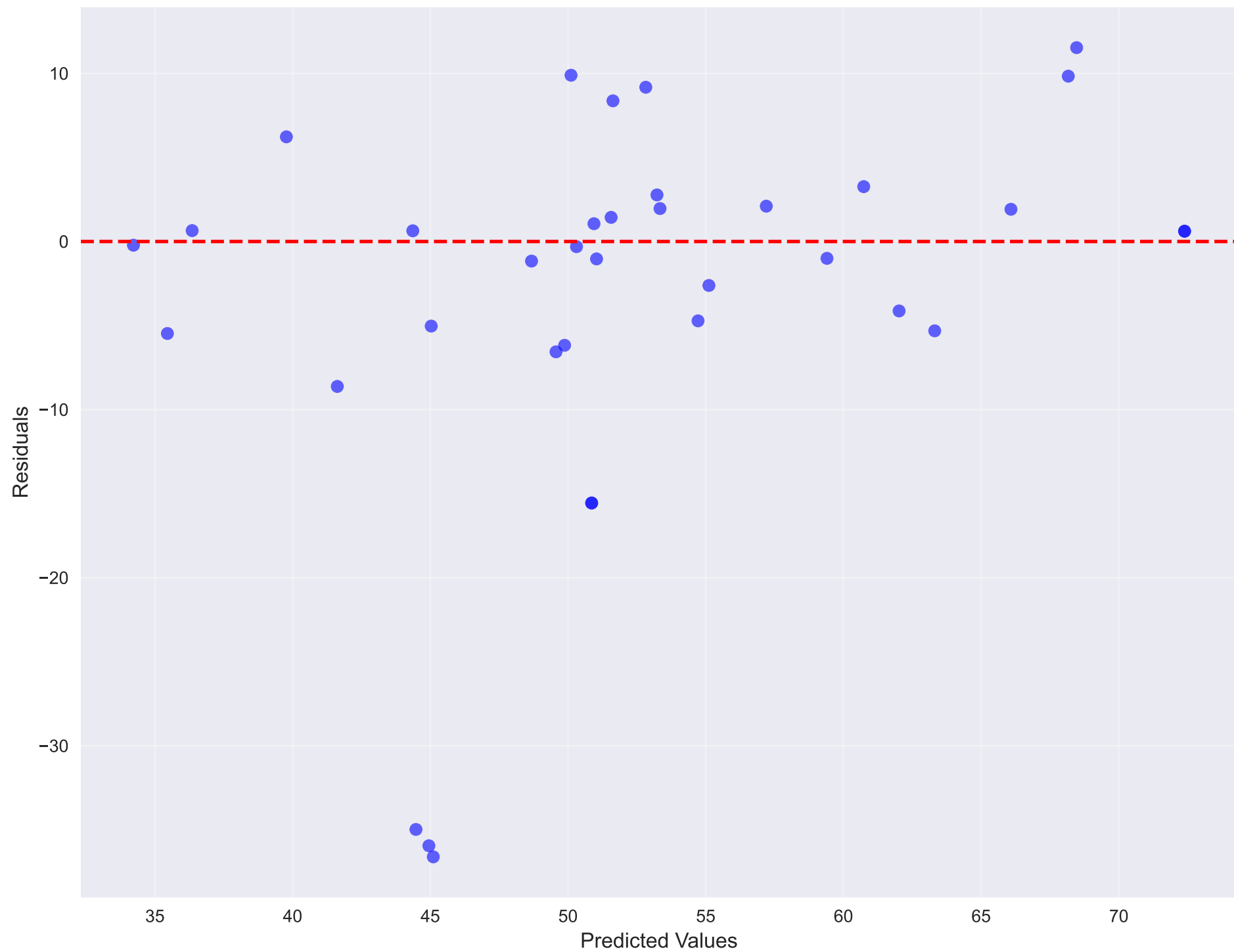
## DATASET INFORMATION:

- Target Variable: Last Column
- Problem Type: Regression
- Cross-validation: 3-fold GridSearchCV used for hyperparameter tuning

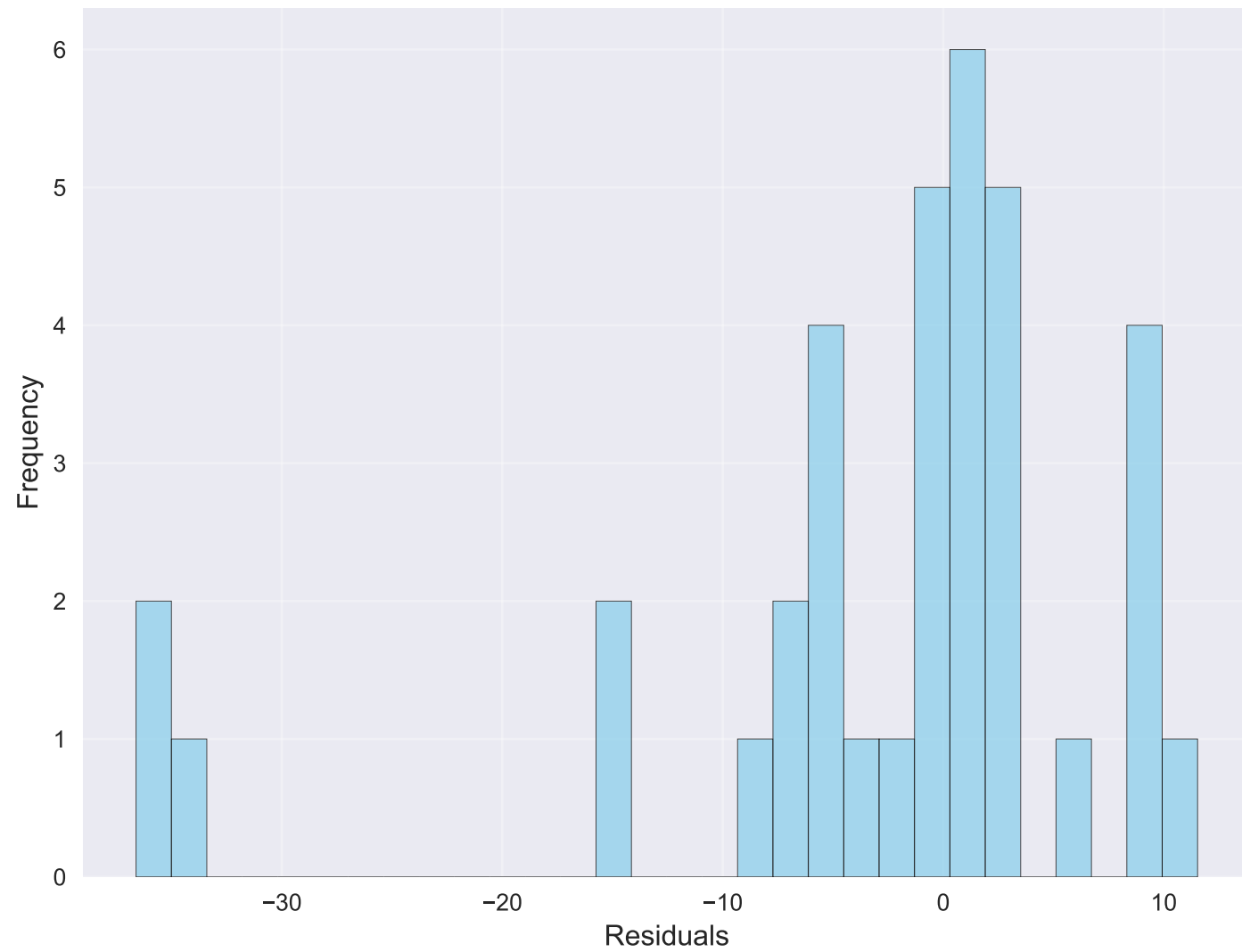
Random Forest: Actual vs Predicted Values



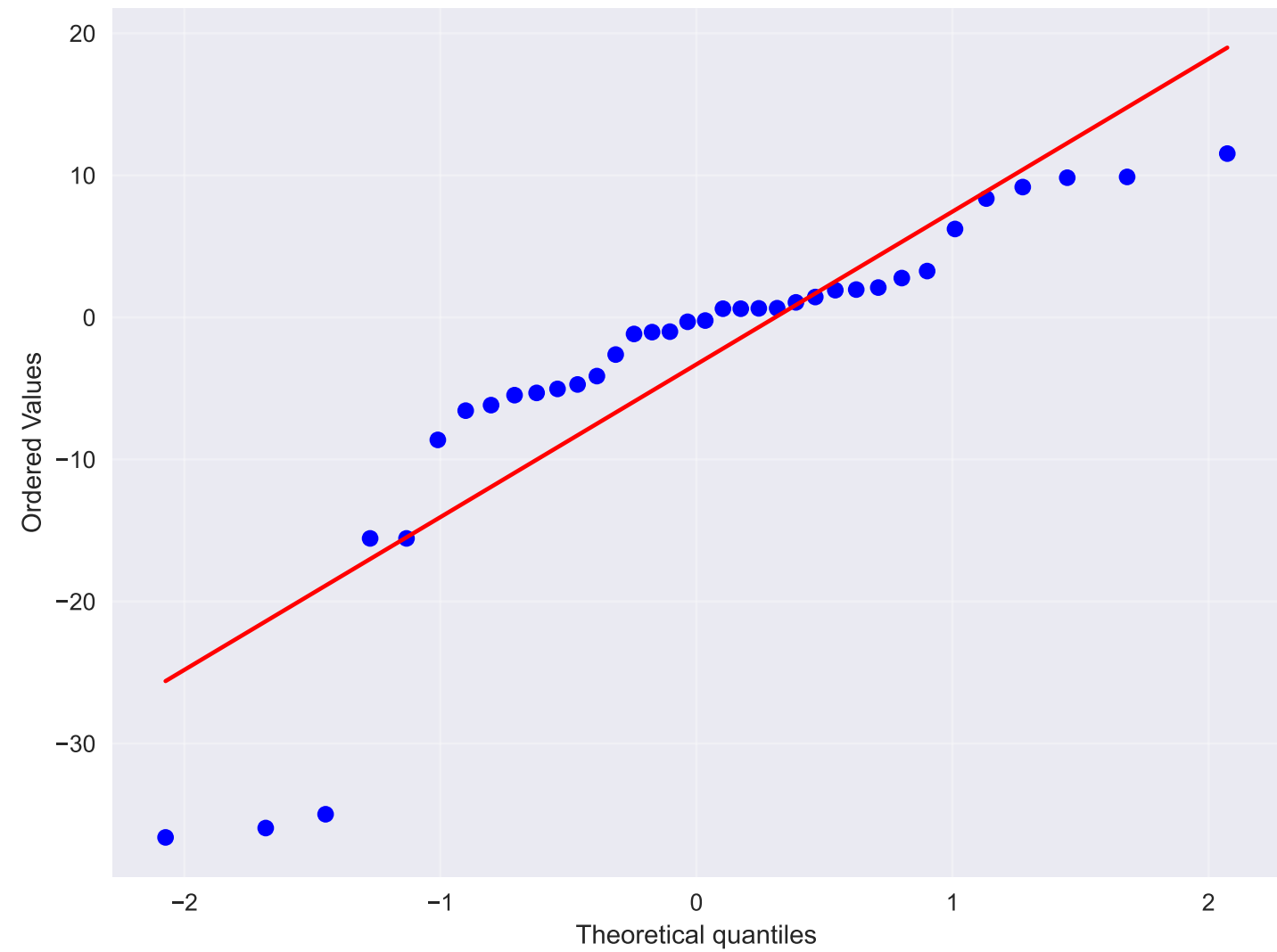
Random Forest: Residual Plot



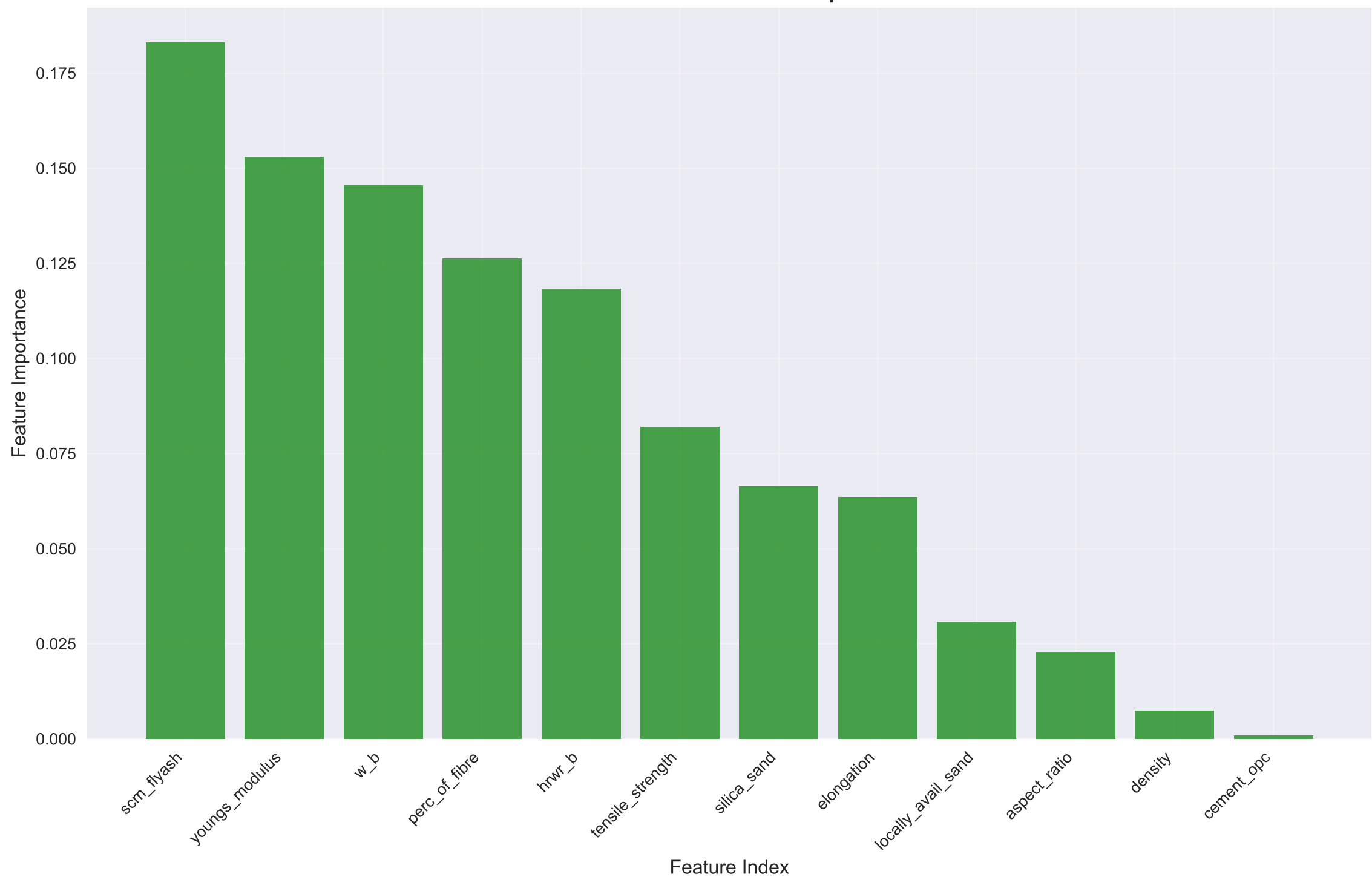
Distribution of Residuals



Q-Q Plot of Residuals



Random Forest: Feature Importance



Random Forest: Performance Metrics Summary

