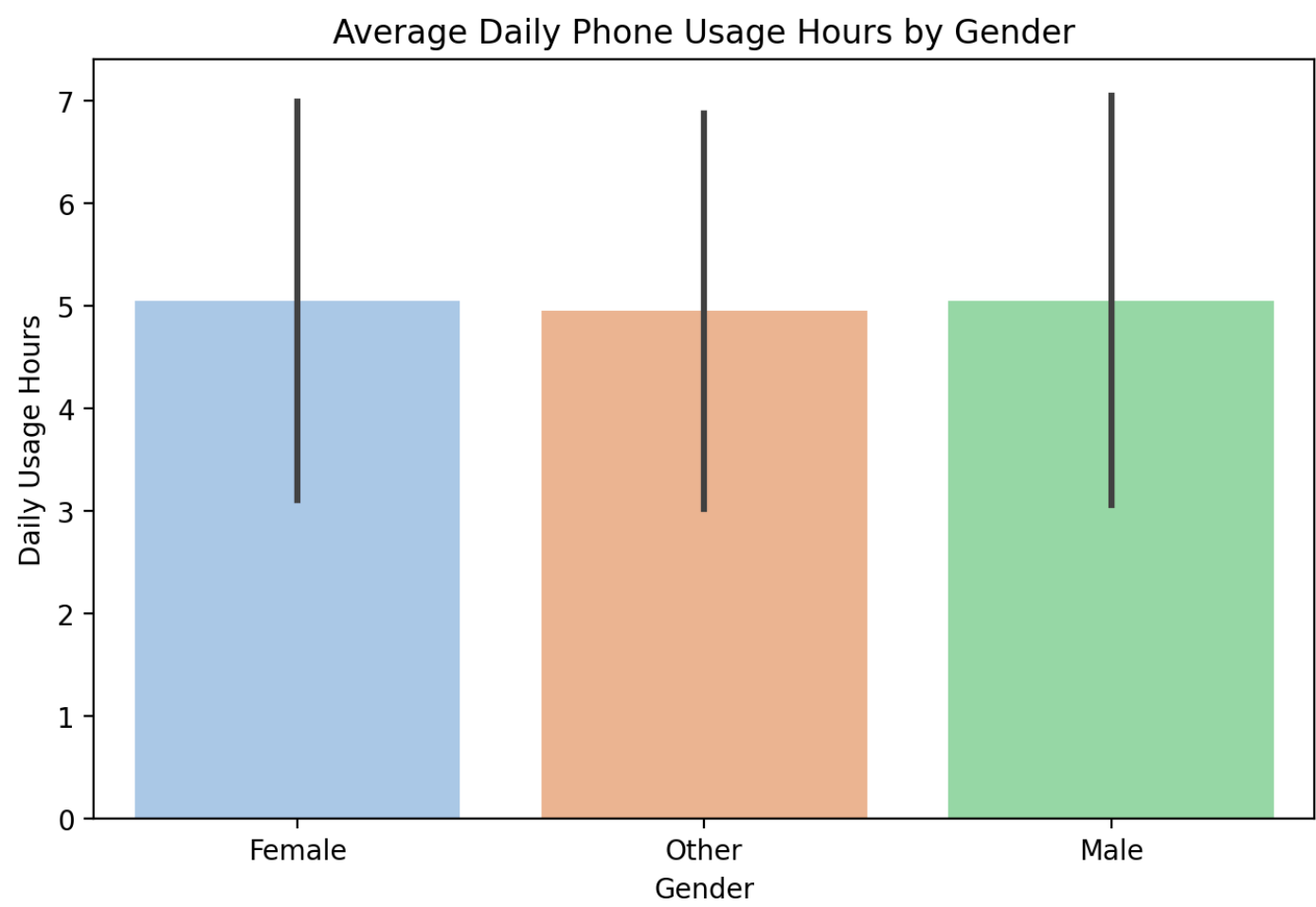
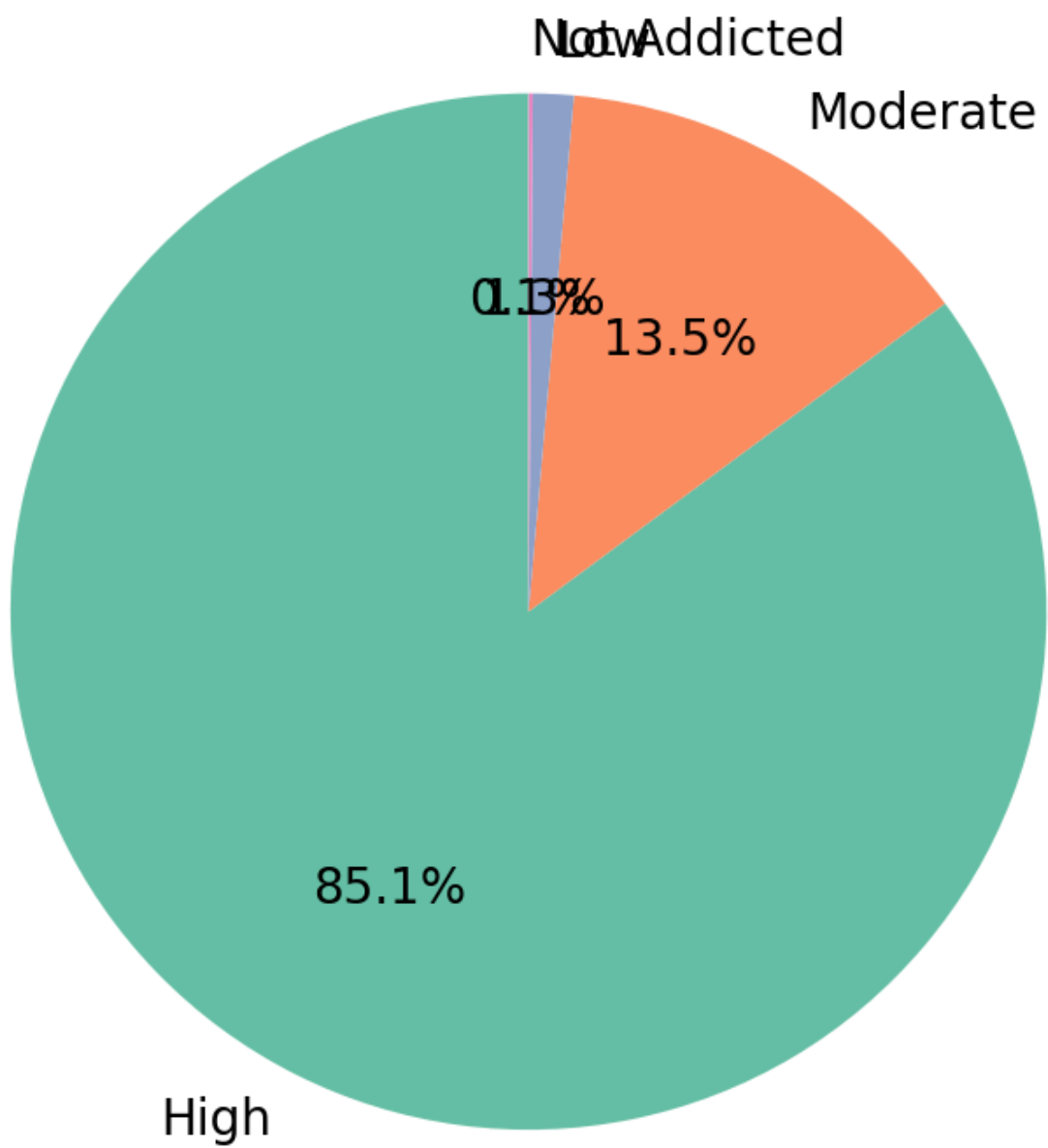


Teen Smartphone Addiction - ML Classifier Comparison

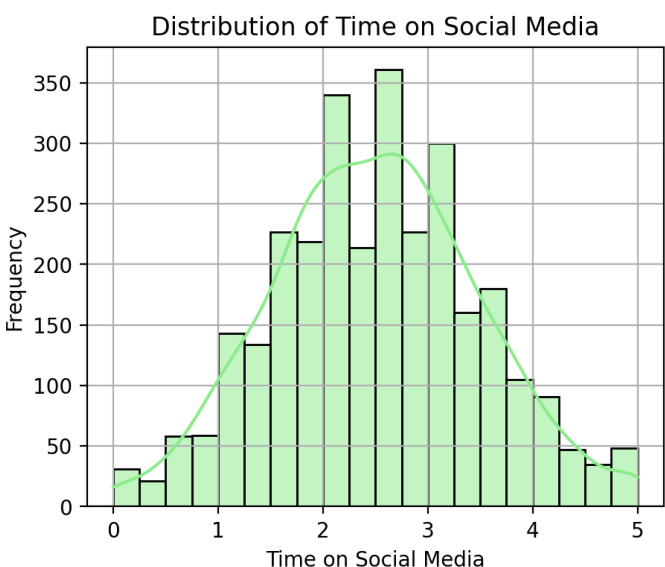
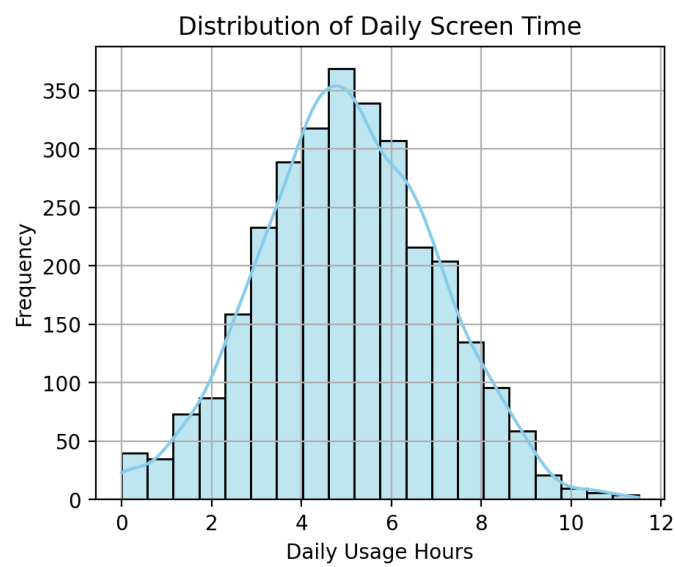
Dataset Preview

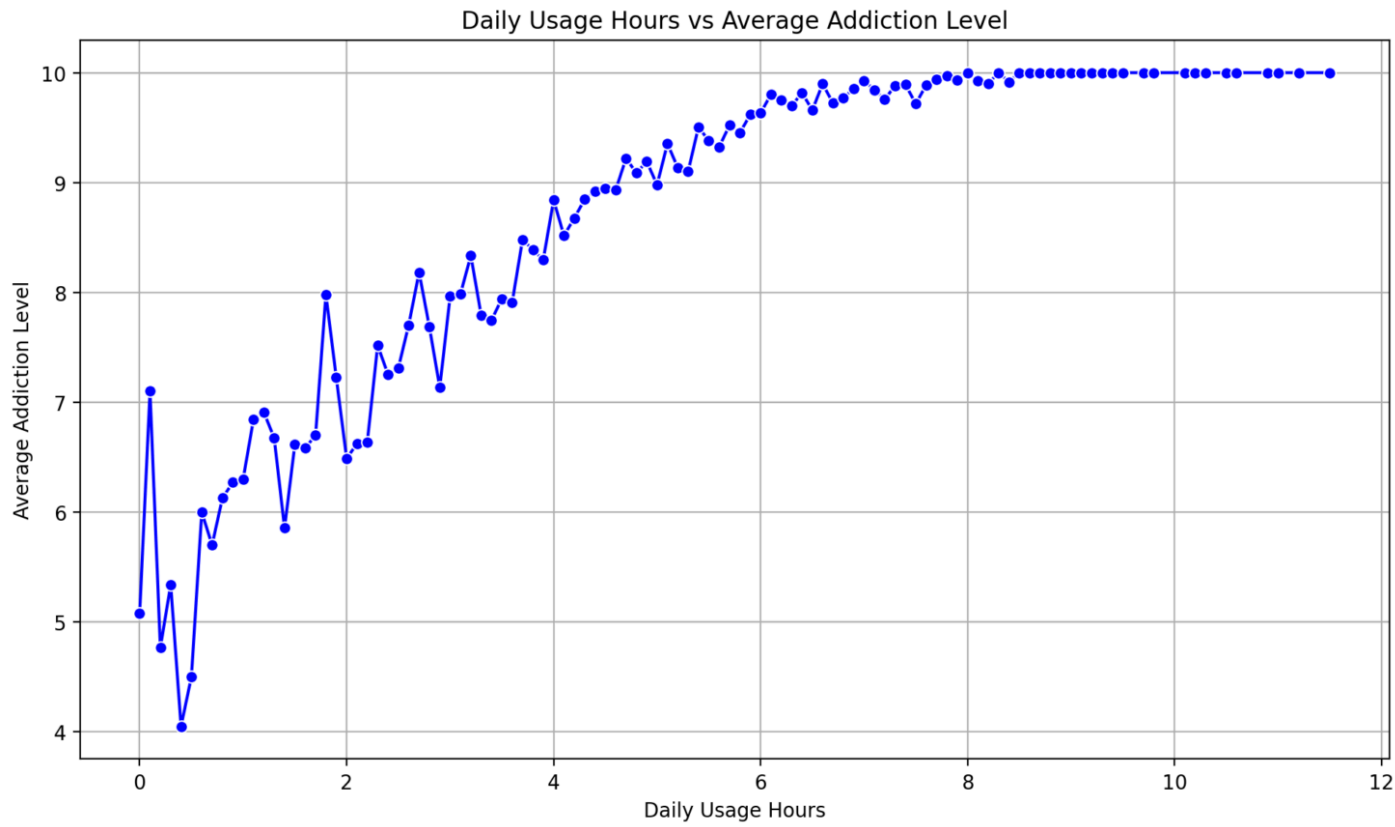
| | ID | Name | Age | Gender | Location | School_Grade | Daily_Usage_Hours | Sleep_Hours |
|---|----|-------------------|-----|--------|------------------|--------------|-------------------|-------------|
| 0 | 1 | Shannon Francis | 13 | Female | Hansonfort | 9th | 4 | |
| 1 | 2 | Scott Rodriguez | 17 | Female | Theodorefort | 7th | 5.5 | |
| 2 | 3 | Adrian Knox | 13 | Other | Lindseystad | 11th | 5.8 | |
| 3 | 4 | Brittany Hamilton | 18 | Female | West Anthony | 12th | 3.1 | |
| 4 | 5 | Steven Smith | 14 | Other | Port Lindsaystad | 9th | 2.5 | |

Addiction Category Distribution



Screen Time Analysis

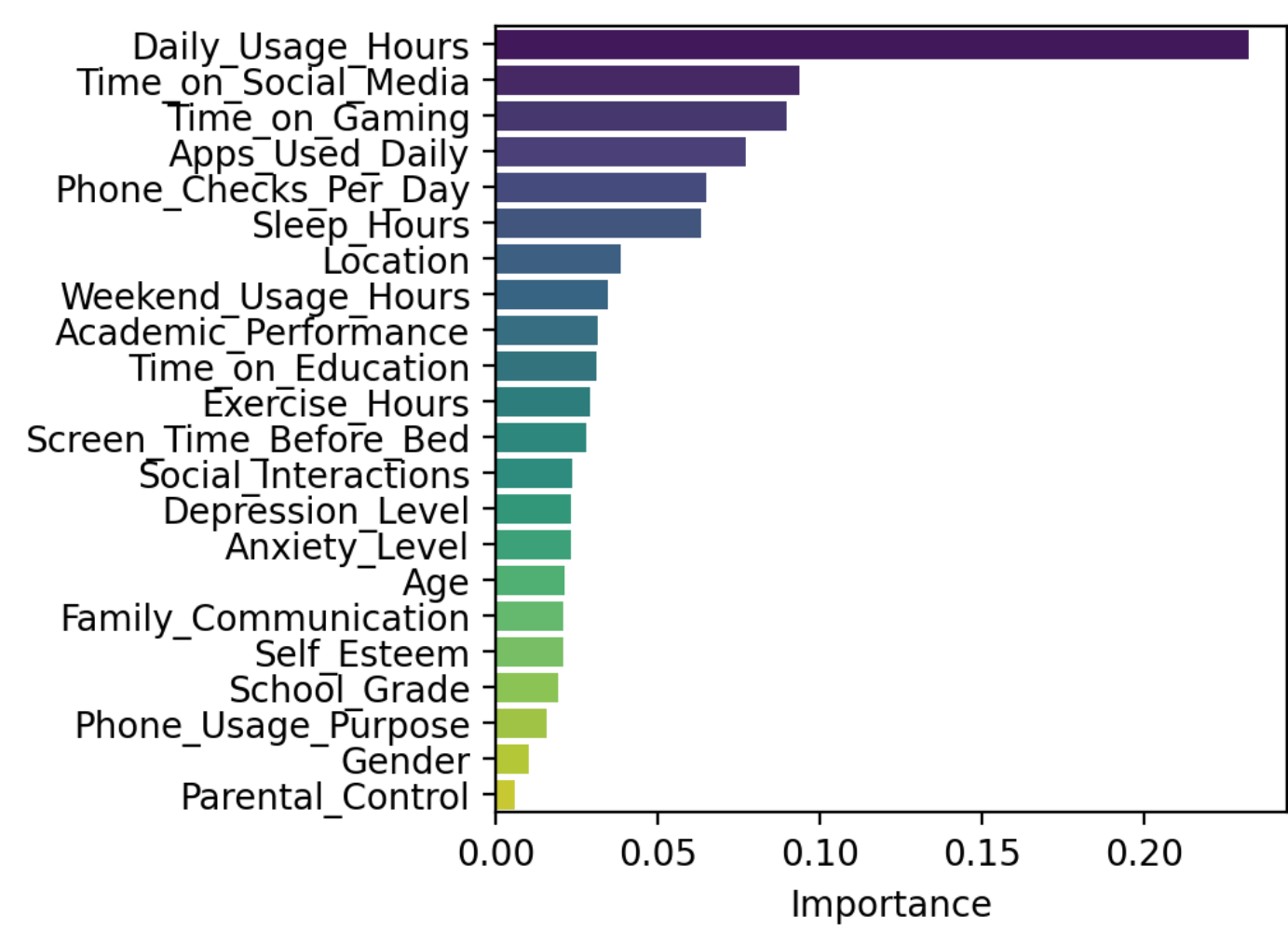




Random Forest Evaluation

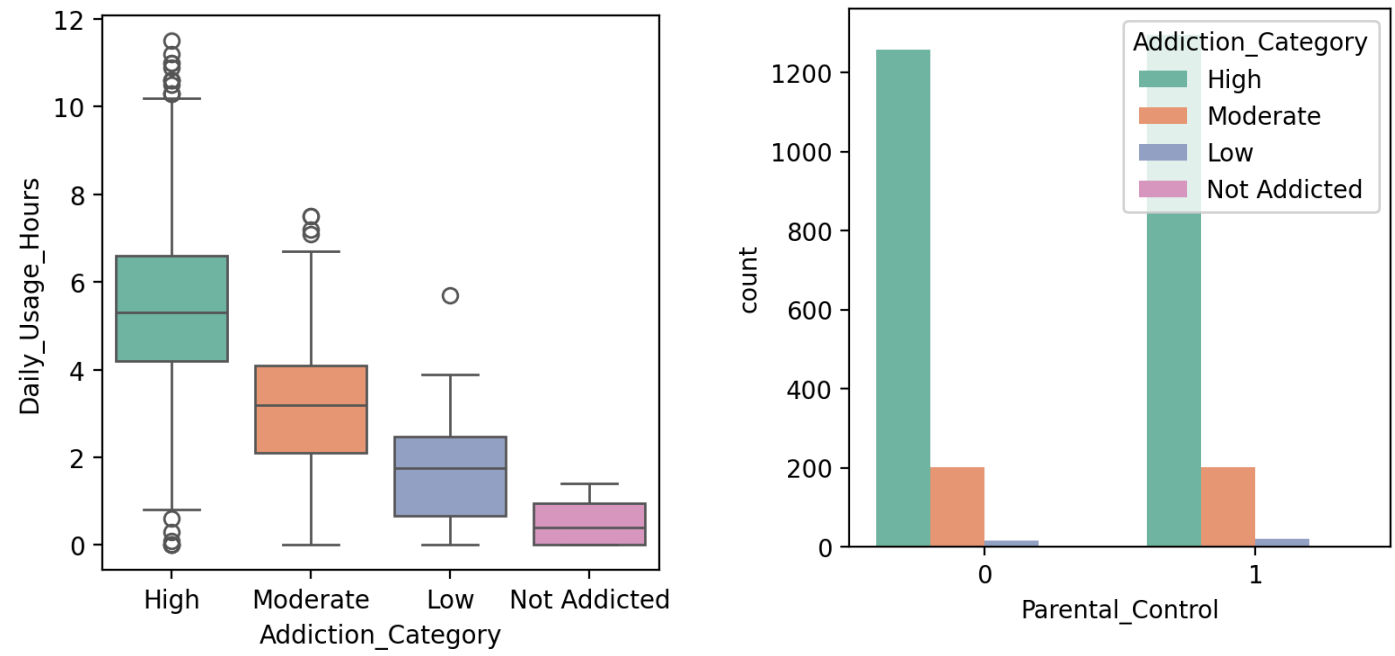


Feature Importance Insights



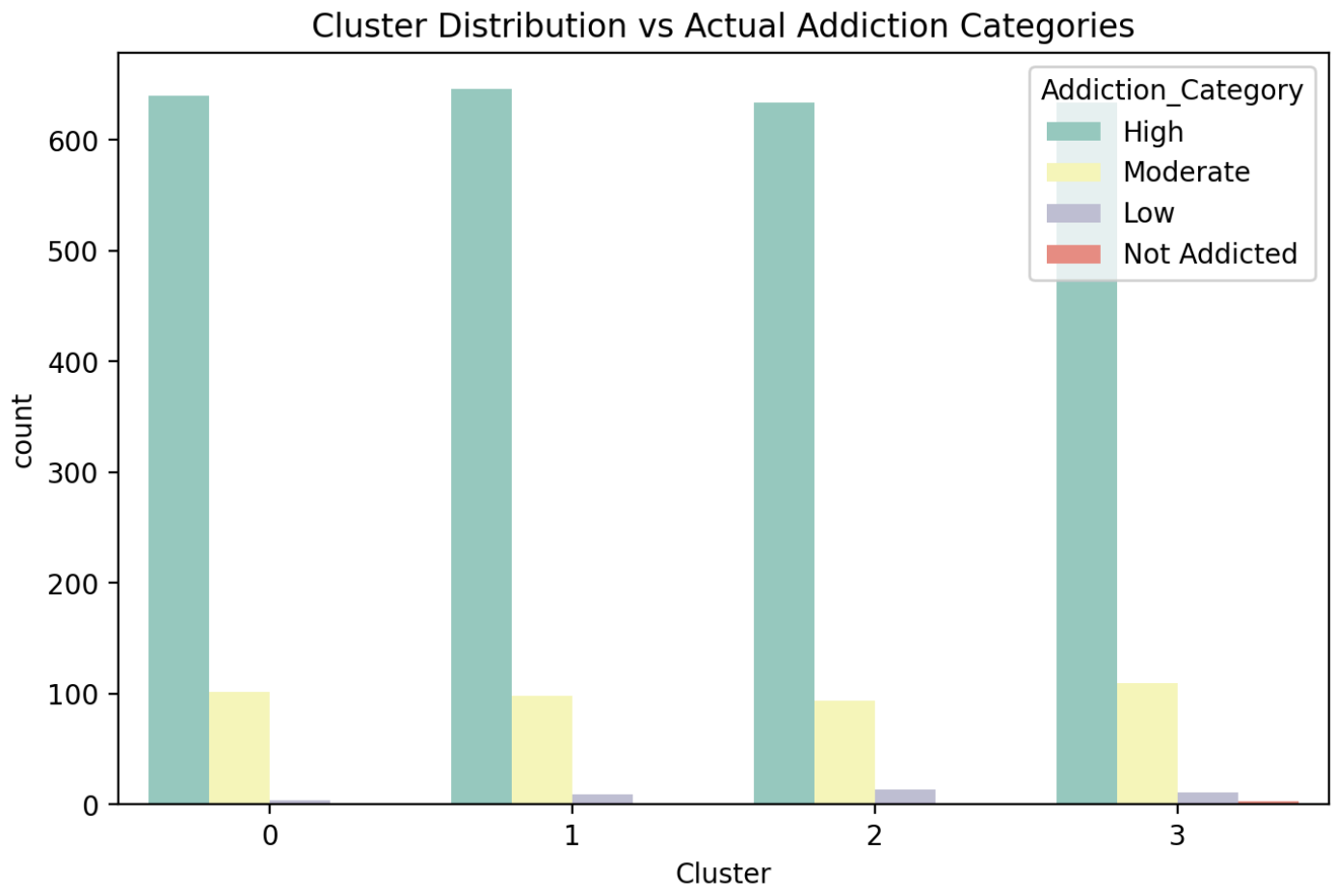
Most Important:
Daily_Usage_Hours

Least Important:
Parental_Control



Unsupervised Clustering (K-Means)

Silhouette Score for K-Means: 0.555



Model Performance Summary (All Metrics)

| Model | Accuracy | Precision | Recall | F1 Score |
|---------------------|----------|-----------|----------|----------|
| Decision Tree | 0.848000 | 0.854000 | 0.848000 | 0.851000 |
| Logistic Regression | 0.990000 | 0.988000 | 0.990000 | 0.989000 |
| kNN | 0.875000 | 0.842000 | 0.875000 | 0.840000 |
| SVM | 0.948000 | 0.935000 | 0.948000 | 0.942000 |
| Neural Network | 0.970000 | 0.968000 | 0.970000 | 0.969000 |
| Random Forest | 0.875000 | 0.839000 | 0.875000 | 0.836000 |

Performance Metrics Comparison

