Customer Churn Prediction

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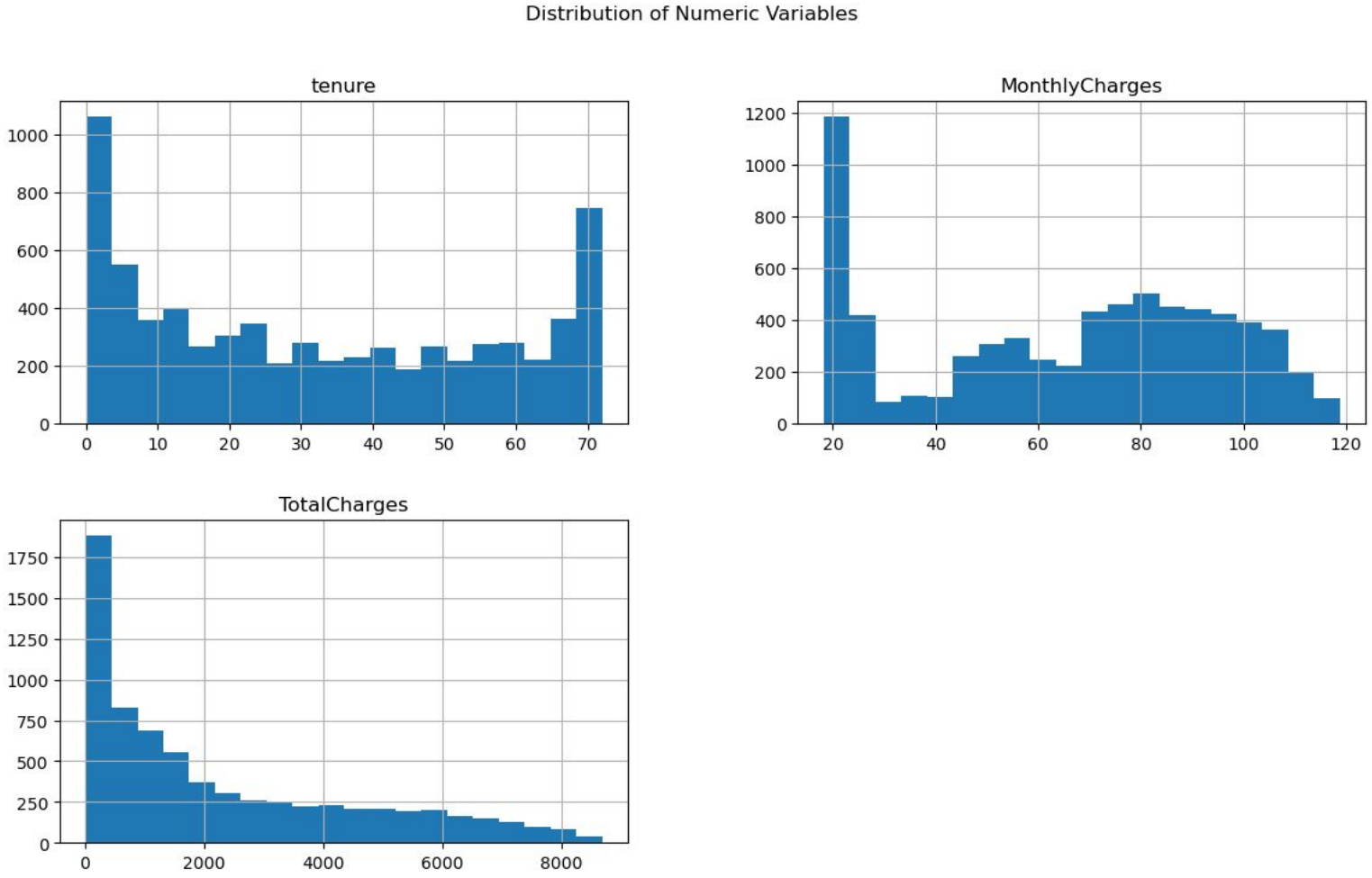
Project Overview

- Objective: Develop a model to predict customer churn
  - Industry: Telecommunications
  - Goal: Reduce churn, improve retention

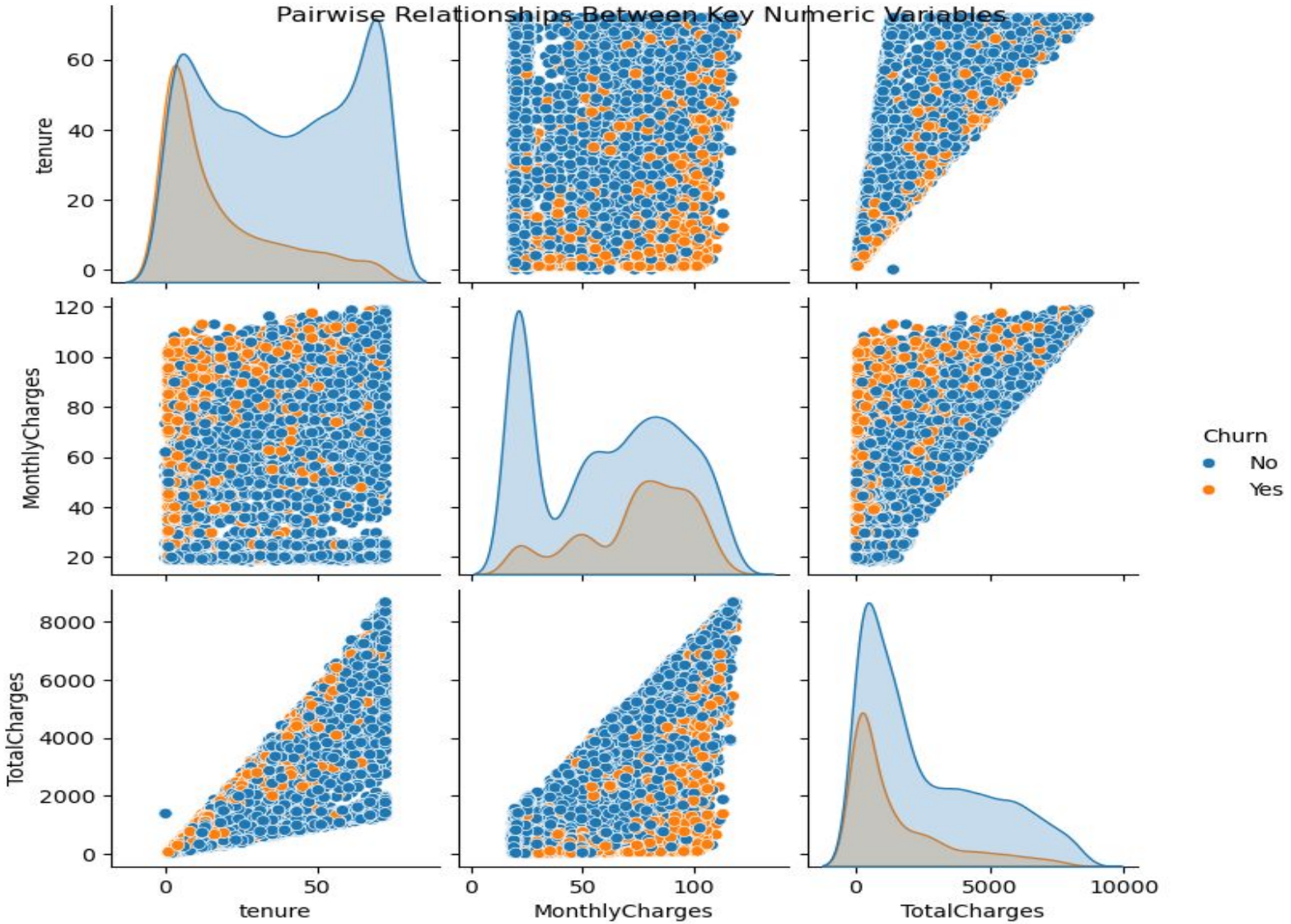
Data Overview

- Dataset: Telco Churn (7,043 entries, 21 columns)
  - Key Feature: Tenure
  - Key Feature: MonthlyCharges
  - Key Feature: TotalCharges
  - Key Feature: Contract Type
  - Key Feature: Payment Method

EDA: Tenure Distribution



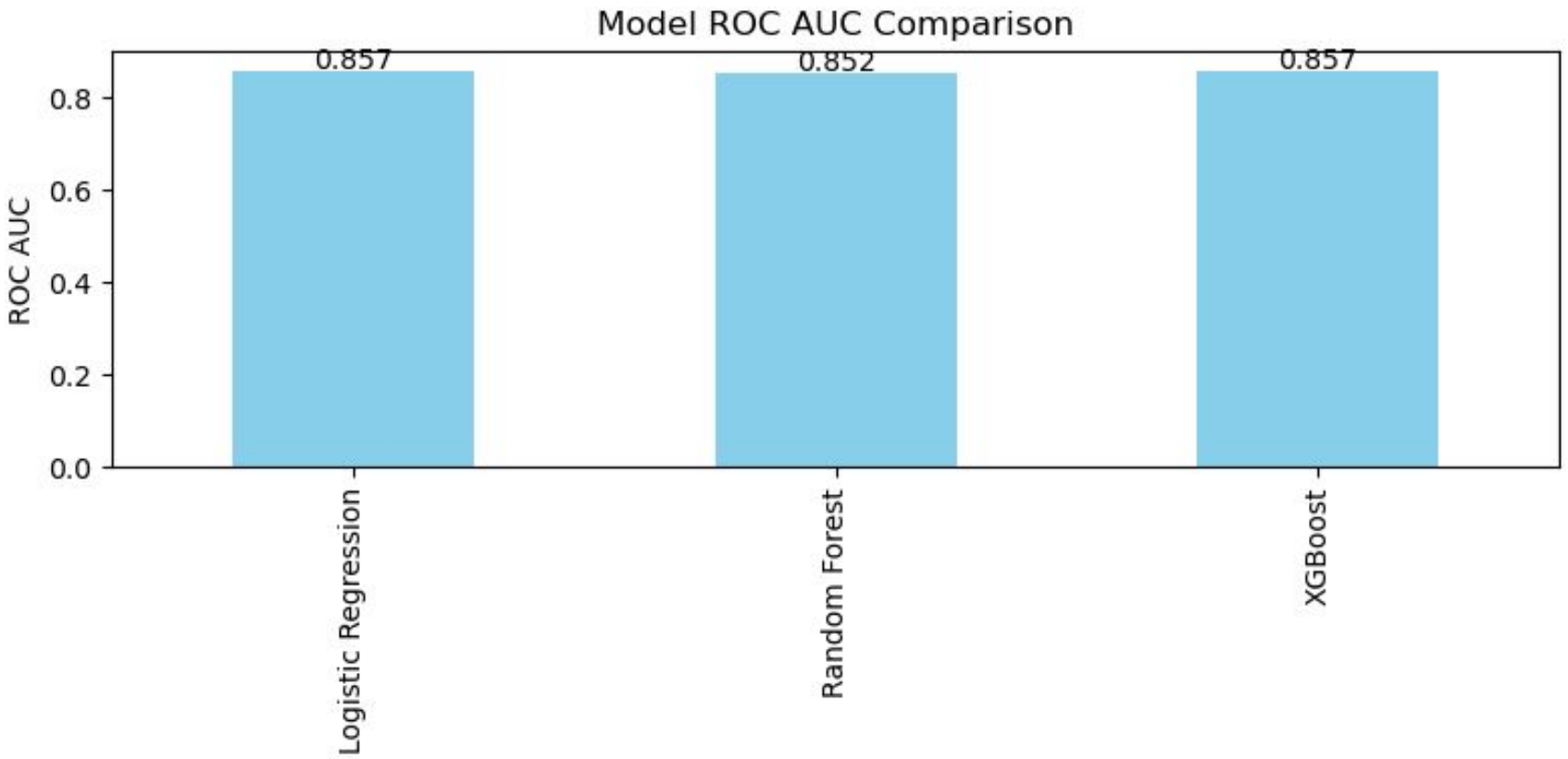
EDA: Pairwise Relationships



Model Performance Summary

- Logistic Regression: Acc=0.811, Prec=0.686, Recall=0.563, F1=0.618, AUC=0.857
  - Random Forest: Acc=0.792, Prec=0.721, Recall=0.383, F1=0.501, AUC=0.852
  - XGBoost: Acc=0.806, Prec=0.686, Recall=0.528, F1=0.596, AUC=0.857 (Best)

Model ROC AUC Comparison



Recommendations

- 1. Target High-Risk Customers
  - 2. Promote Long-Term Contracts
  - 3. Billing Support Programs

Further Research

- • Time Series Analysis
  - • Additional Customer Touchpoints
  - • A/B Testing Strategies

Conclusion

- XGBoost achieved best ROC AUC of 0.857.
  - Next Steps: refine model with additional features