Reducing Customer Churn through Data

Using machine learning to move from reactive outreach to proactive customer preservation.

The Problem

- Customer churn is a major barrier to long-term revenue growth.

The Objective

- Identify and predict customers at risk of churn before they leave.

The Solution

- An automated Random Forest model that accurately flags high-risk accounts.
- Data-driven decision-making to optimize strategies and maximize revenue potential.

Why Do Customers Leave?

- Customers on month-to-month contracts are at the highest risk of churn.

- New customers with low total charges (first 3–6 months) are particularly vulnerable.

- Senior customers also exhibit a higher churn rate.

- Service type matters: customers with Fiber Optic service churn more often than those with DSL.

- Customers who pay via electronic check tend to churn more frequently.

Churn Distribution (%)
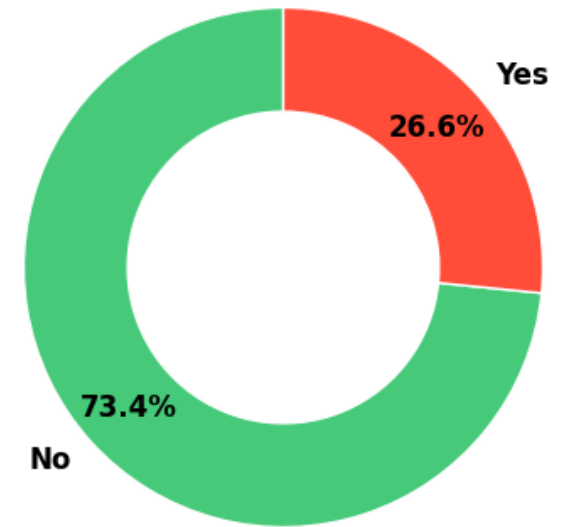
Tenure (Months) and Customer Churn Relationship
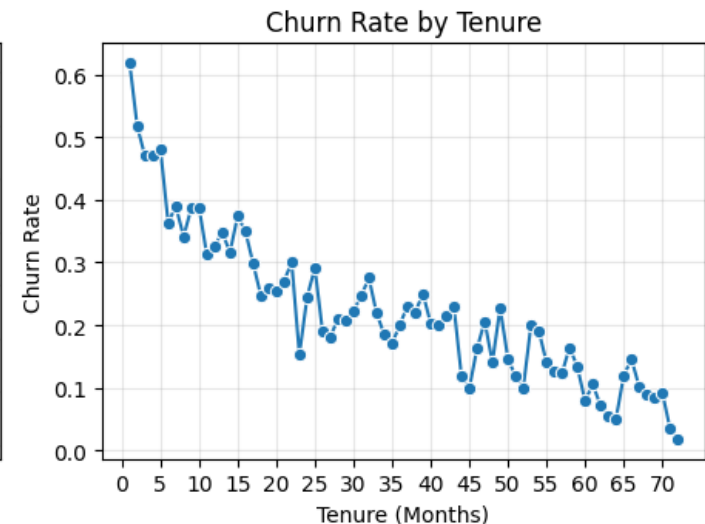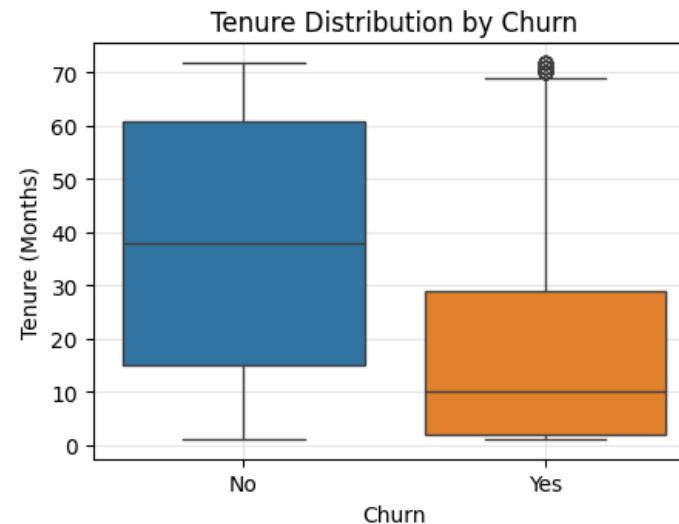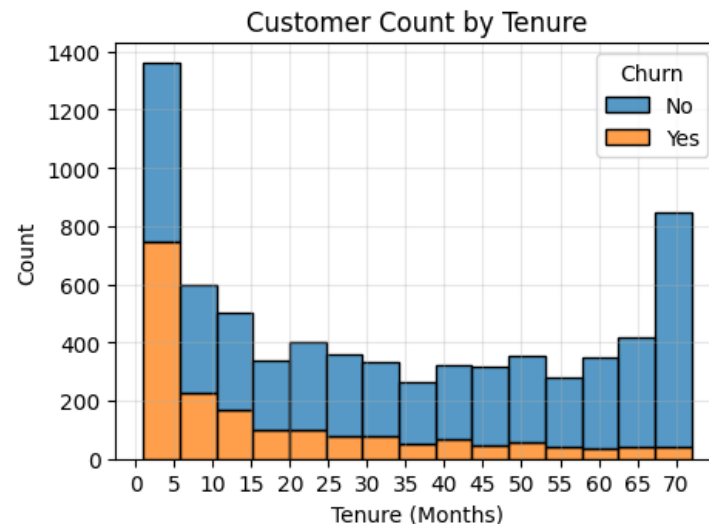
Catching Churners Before They Go

- The Random Forest model achieved 73% recall, prioritizing the identification of at-risk customers.

- Impact: The model successfully identifies nearly 4 out of 5 customers likely to churn.

- Efficiency: Retention teams can focus resources on the highest-risk segment, improving outcomes and optimizing effort.

Top features for churn prediction:

- Contract
- Total Charges
- Tenure
- Online Security
- Tech Support
- Fiber optic Service

Random Forest Importance

Total Charges of Customers

Churn Distribution by Contract Type
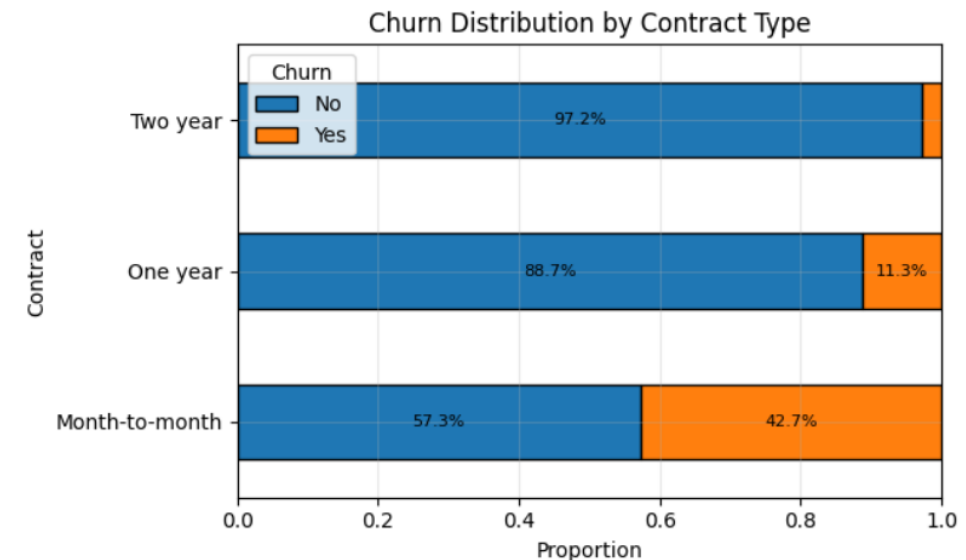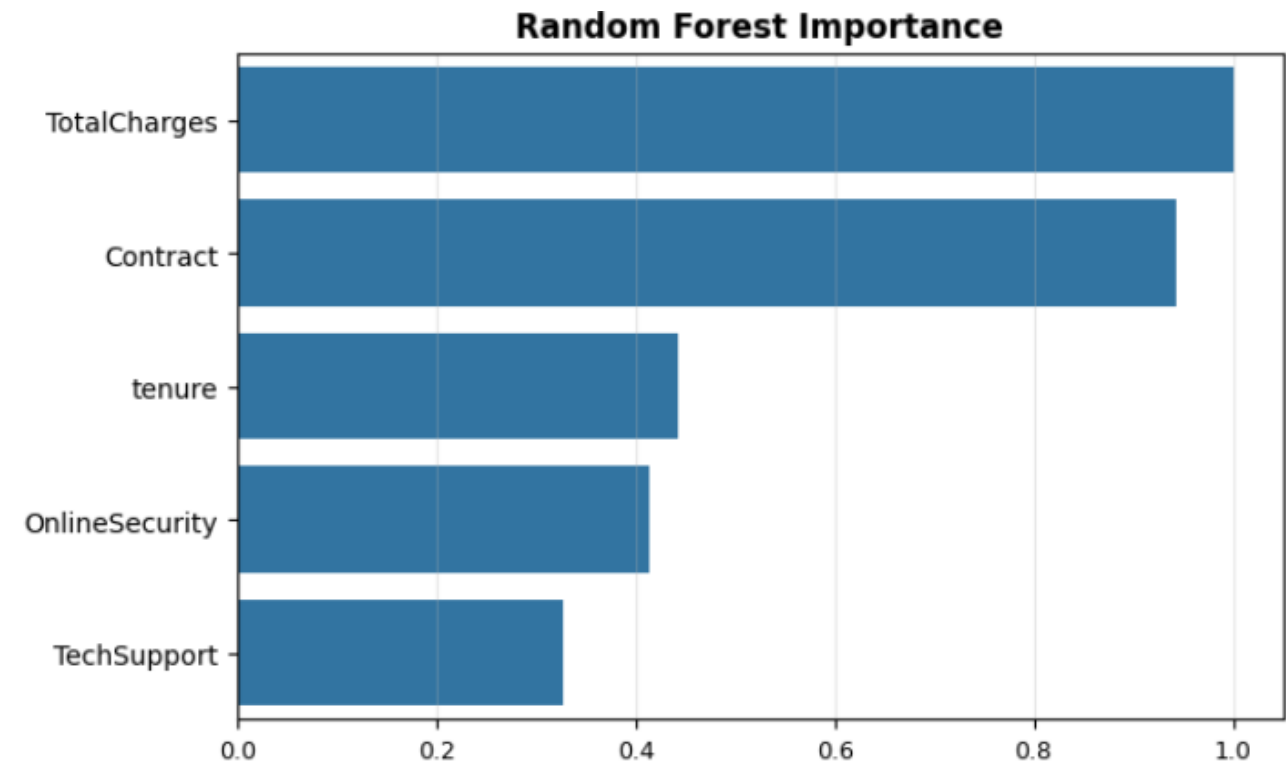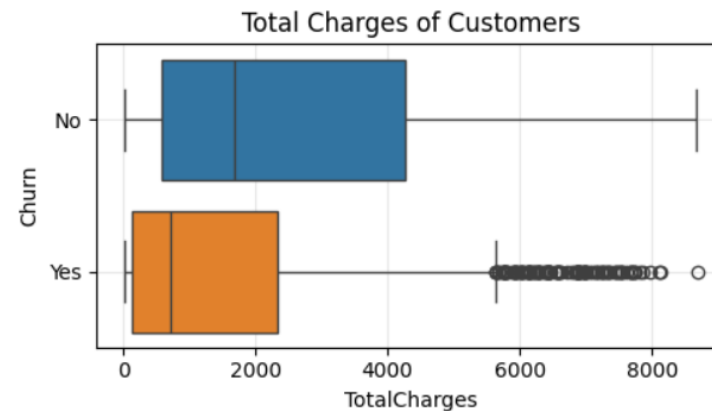
Data-Driven Retention Strategy

- **Incentivize Loyalty**: Offer targeted promotions to transition month-to-month users to one- or two-year contracts.

- **Service Investigation**: Conduct a thorough audit of Fiber Optic service to determine if churn is driven by technical issues or pricing.

- **Value Bundling**: Provide free or discounted Online Security and Tech Support to high-risk customers to increase service "stickiness."

- **Early Tenure Onboarding**: Implement an enhanced "First 90 Days" support program for new customers.

- **Predictive Action**: Leverage the model to identify at-risk customers early and apply targeted retention strategies.

Executive Summary

Section	Details
Problem	Customer churn reduces revenue and growth. Identifying at-risk customers early allows proactive retention strategies to keep them.
Model Performance	The Random Forest model achieved **73% accuracy** and **79% recall** for churners, meaning it can reliably identify most customers likely to leave.
Key Churn Drivers	- **Contract**: Month-to-month customers are at highest risk. - **TotalCharges**: Newer customers with lower total spend churn more. - **FiberOpticService**: Higher churn among fiber users. - **OnlineSecurity & TechSupport**: Lack of these add-ons increases churn.
Business Actions	- Incentivize long-term contracts. - Focus retention efforts on new customers (first 3–6 months). - Investigate the FiberOptic Service for problem vectors. - Bundle OnlineSecurity and TechSupport to increase stickiness. - Use the model to flag high-risk customers weekly for proactive outreach.

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