Title: Customer Churn Analysis for a Telco Company

Author: İlayda Başyiğit **Date:** 4 August 2025

---

1. Introduction

The main goal of this project is to analyze customer data from a telecommunications company to understand the key factors that lead to customer churn. By identifying these factors, we can provide actionable recommendations to the company to help them retain customers and improve their services.

This analysis was conducted using the

R programming language in **RStudio**. The data for this project comes from the

Telco Customer Churn dataset on Kaggle, which includes information on customer demographics, services, and account details.

---

2. Data Cleaning and Preparation

Before starting the analysis, we performed a few data cleaning steps:

- We loaded the data into R using the `read.csv2()` function to correctly handle the semicolon (`;`) delimiter.
- We identified that the `MonthlyCharges` and `TotalCharges` columns were incorrectly read as text (character). We converted them to a numeric data type, which is necessary for statistical analysis.

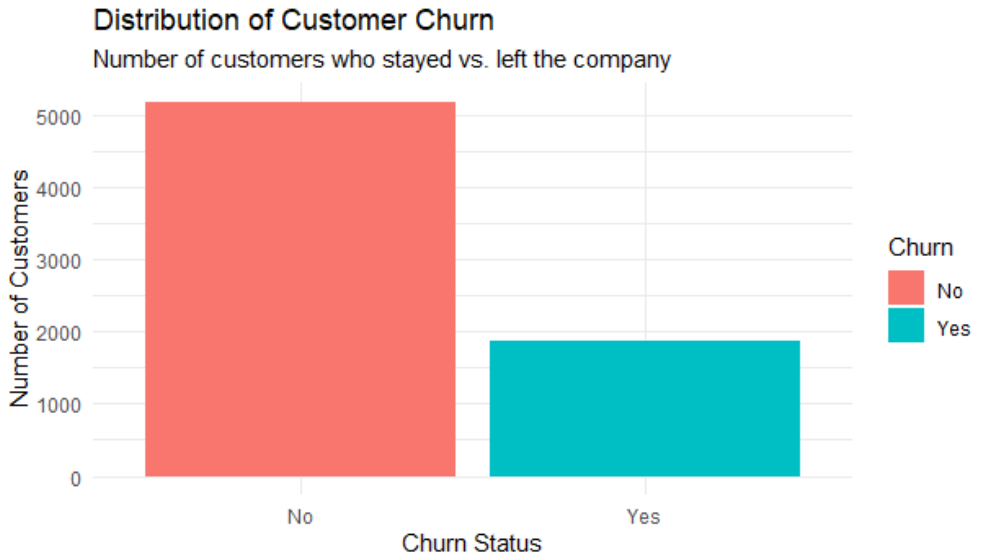
---

3. Analysis and Key Findings

Our analysis focused on creating a series of visual charts to explore the relationships between various customer attributes and churn status. We specifically used **bar charts**, **density plots**, **box plots**, and a **scatter plot** to investigate how factors like **contract type, tenure, monthly charges, internet service**, and their combined effects correlate with customer churn. This visual approach allowed us to identify key patterns and potential drivers of customer churn directly from the data.

3.1. General Churn Distribution

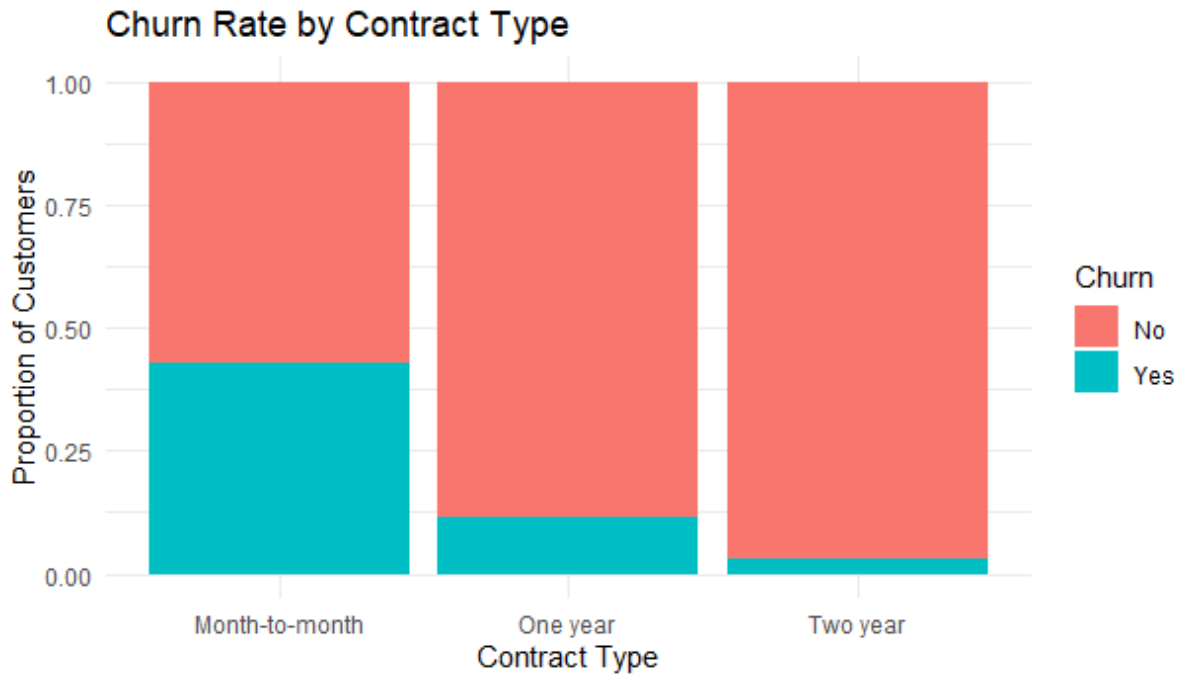
- **Observation:**



- **Finding:** The analysis shows that the majority of customers have not churned (`No`), but a significant number of them have left the company (`Yes`). This indicates that the dataset is imbalanced.

3.2. Churn by Contract Type

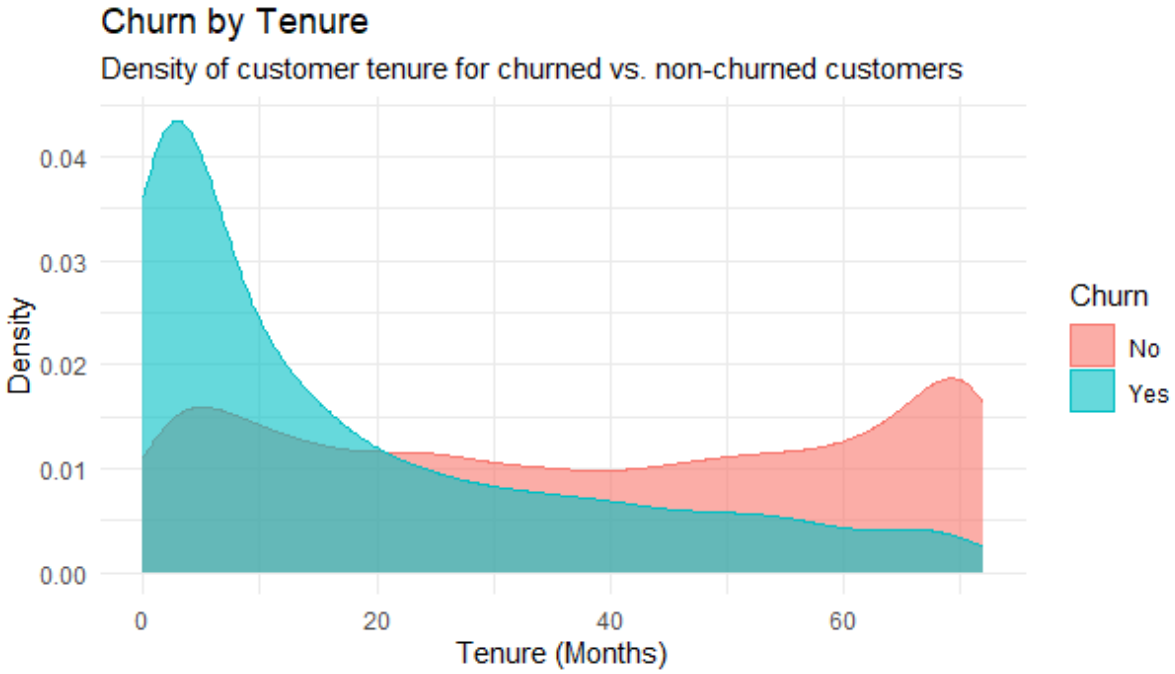
- **Observation:**



- **Finding:** We observed a strong relationship between contract type and churn. Customers with **month-to-month contracts** have a much higher churn rate (around 40%) compared to those with one-year or two-year contracts.

3.3. Churn by Tenure

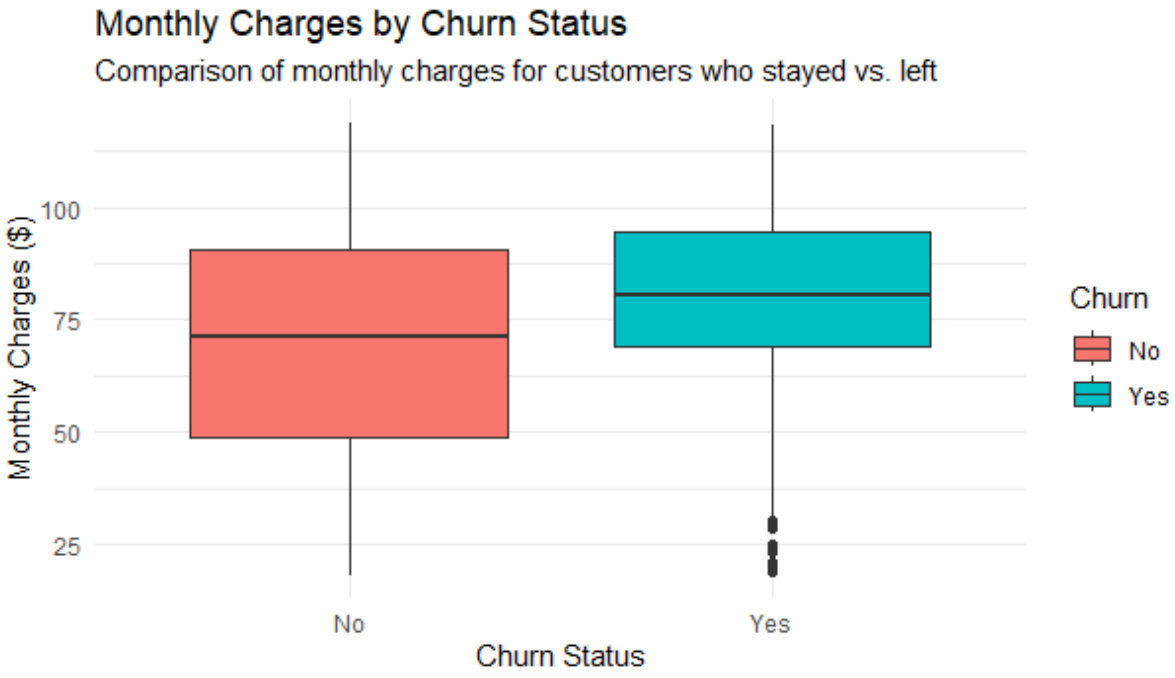
- **Observation:**



- **Finding:** The density plot clearly shows that most customer churn happens in the **first few months of service**. Customers who have stayed with the company for a long time (`high tenure`) are very likely to remain loyal.

3.4. Churn by Monthly Charges

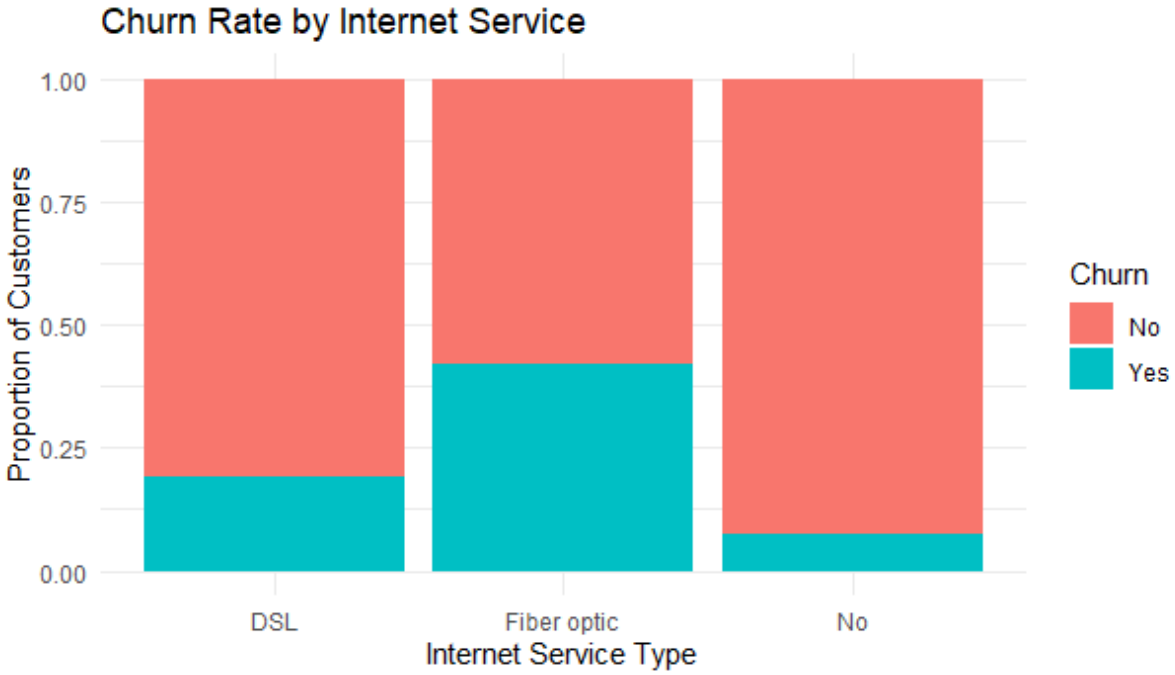
- **Observation:**



- **Finding:** We found that customers who have churned generally have **higher monthly charges** compared to customers who have not churned.

3.5. Churn by Internet Service

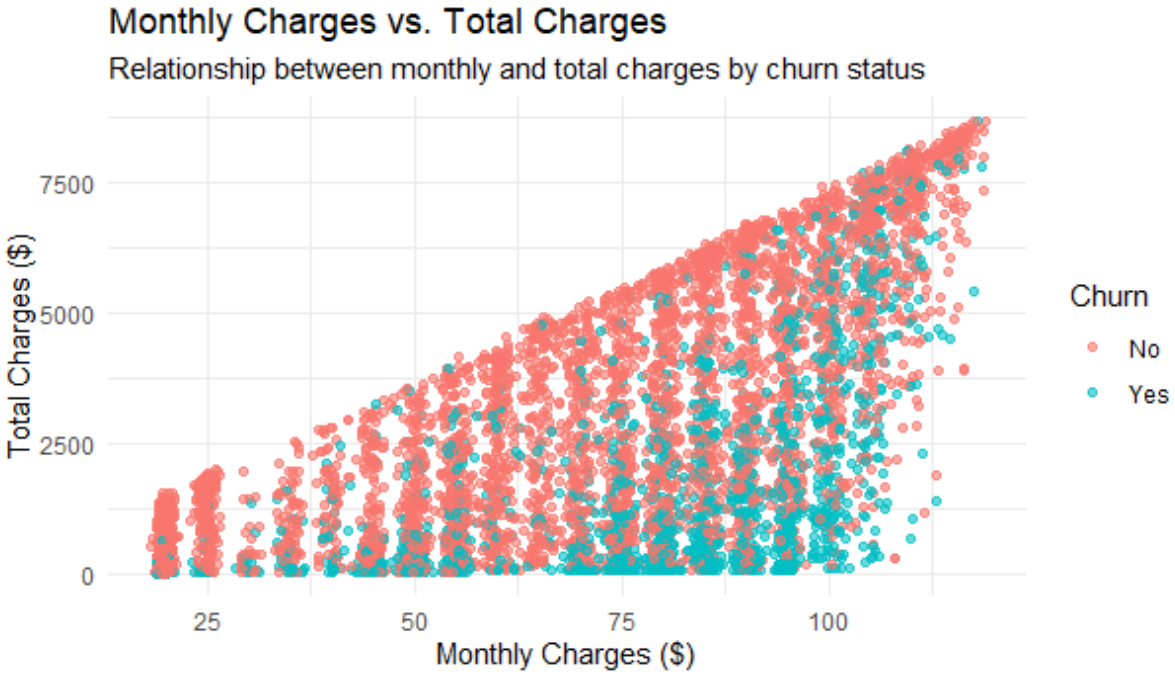
- **Observation:**



- **Finding:** The highest churn rate is found among customers who use **Fiber optic** service. Customers with DSL or no internet service have a significantly lower churn rate.

3.6. Monthly vs. Total Charges

- **Observation:**



- **Finding:** The scatter plot confirms a positive correlation between monthly and total charges. We also see that the highest concentration of churned customers (`Yes`) is in the areas with **low total charges** (short-term customers).

---

4. Conclusion and Recommendations

Based on the analysis, we have identified three main drivers of customer churn:

1. **Contract Type:** Month-to-month contracts are the riskiest.
2. **Tenure:** New customers are highly likely to churn in the first few months.
3. **Internet Service:** Fiber optic service users have the highest churn rate.

To address these issues, we recommend that the company should:

- Offer incentives for customers to switch from monthly to annual contracts.
- Improve the onboarding process and customer support for new users, especially during their first 6 months.
- Investigate and resolve potential quality issues with the Fiber optic service.