

24 October 2025

# CUSTOMER CHURN DATA ANALYSIS REPORT

## 1. DATASET OVERVIEW

A. The dataset contains information about **3,150 customers** of a telecom company.

Each record represents a customer with numerical features describing their usage behavior, subscription details, and demographics.

B. Main features:

- **Call Failure:** Number of failed call attempts.
- **Complains:** Whether the customer has made a complaint (0 = No, 1 = Yes).
- **Subscription Length:** Duration (in months) of the customer's subscription.
- **Charge Amount:** Amount charged to the customer.
- **Seconds of Use:** Total seconds of call usage.
- **Frequency of Use:** How often the customer uses the service.
- **Frequency of SMS:** Number of SMS messages sent.
- **Distinct Called Numbers:** How many unique numbers the customer has called.
- **Age Group / Age:** Customer's age group and actual age.
- **Tariff Plan:** Type of plan or package the customer is subscribed to.
- **Status:** Indicates the customer's account status.
- **Customer Value:** Calculated overall value of the customer to the company.
- **Churn: Target variable** — 1 if the customer left (churned), 0 if they stayed.

The **goal** of this analysis is to **understand the factors influencing customer churn** and to **predict which customers are at risk of leaving**.

## 2. OBJECTIVE

The primary objective is to **analyze customer behavior** and find **patterns that distinguish churned customers from loyal ones**.

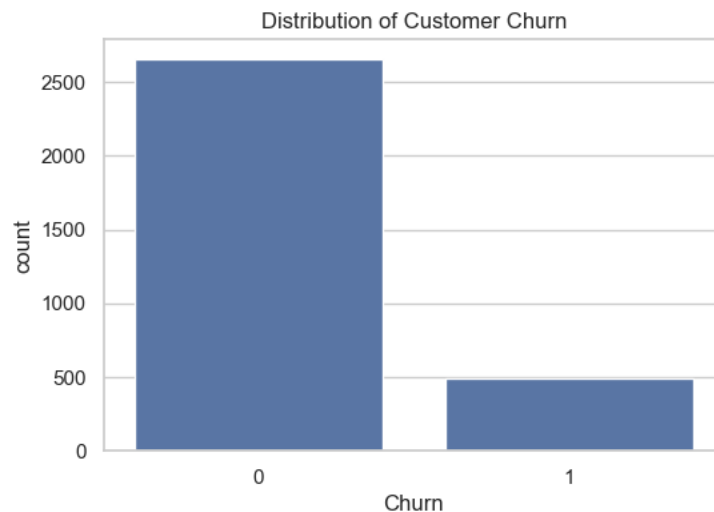
This understanding can later be used to build predictive models for **churn prediction** and design **retention strategies**.

## 3. VISUAL ANALYSIS AND INSIGHTS

Below are the visualizations used and what they reveal:

- **Distribution of Churn**

→ Shows the proportion of churned vs. retained customers.  
Helps identify class imbalance (most customers stayed).

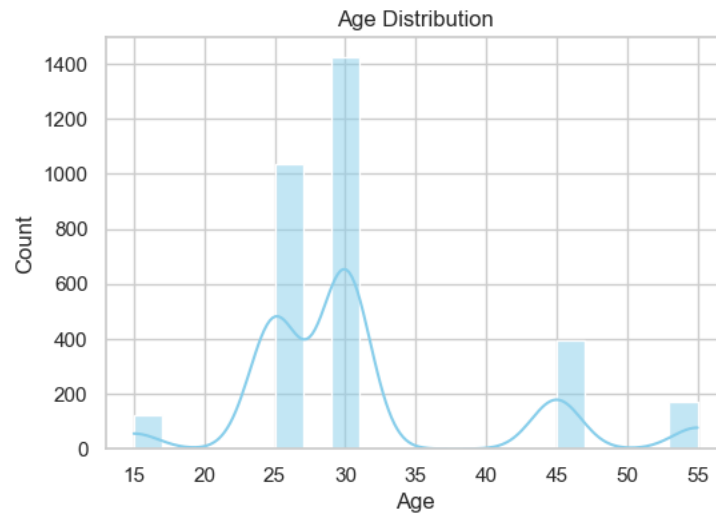


## Customer Churn Data Analysis Report

- **Age Distribution**

→ Displays the age spread of all customers.

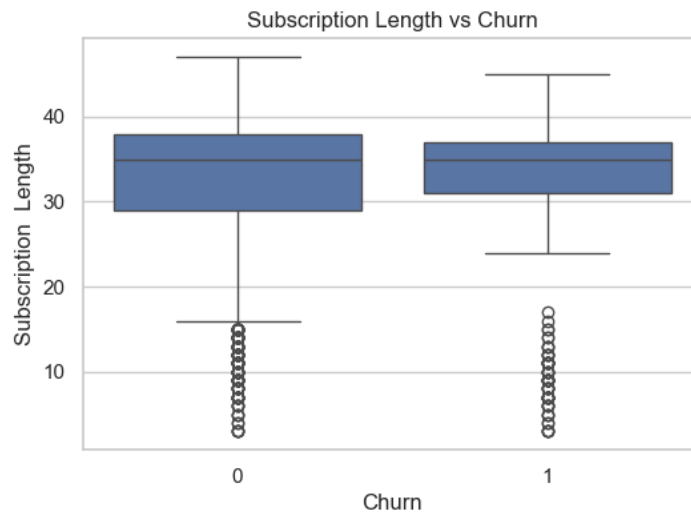
Reveals dominant customer age ranges.



- **Subscription Length vs Churn**

→ Compares how long customers stayed before churning.

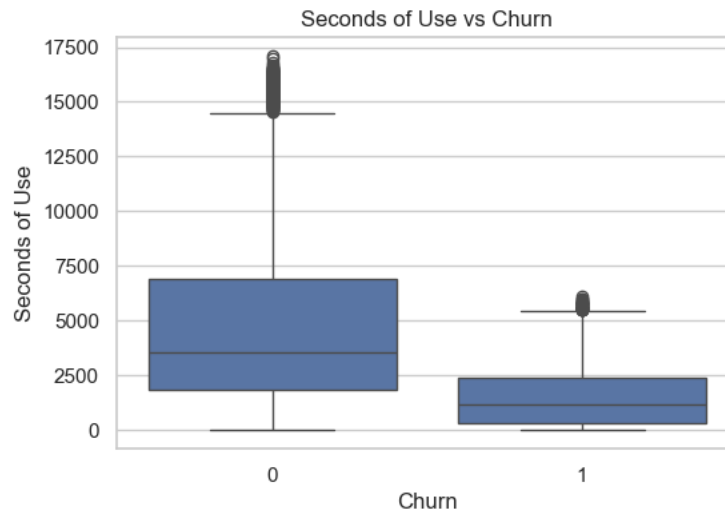
Longer subscription lengths are typically associated with lower churn.



## Customer Churn Data Analysis Report

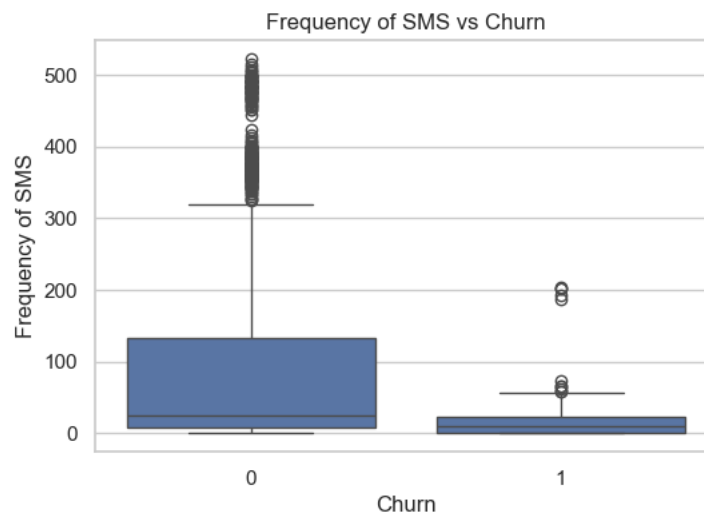
- **Seconds of Use vs Churn**

→ Examines the relationship between total usage and churn.  
Customers with lower usage tend to churn more often.



- **Frequency of SMS vs Churn**

→ Indicates communication activity levels.  
Less active users in SMS are more likely to churn.

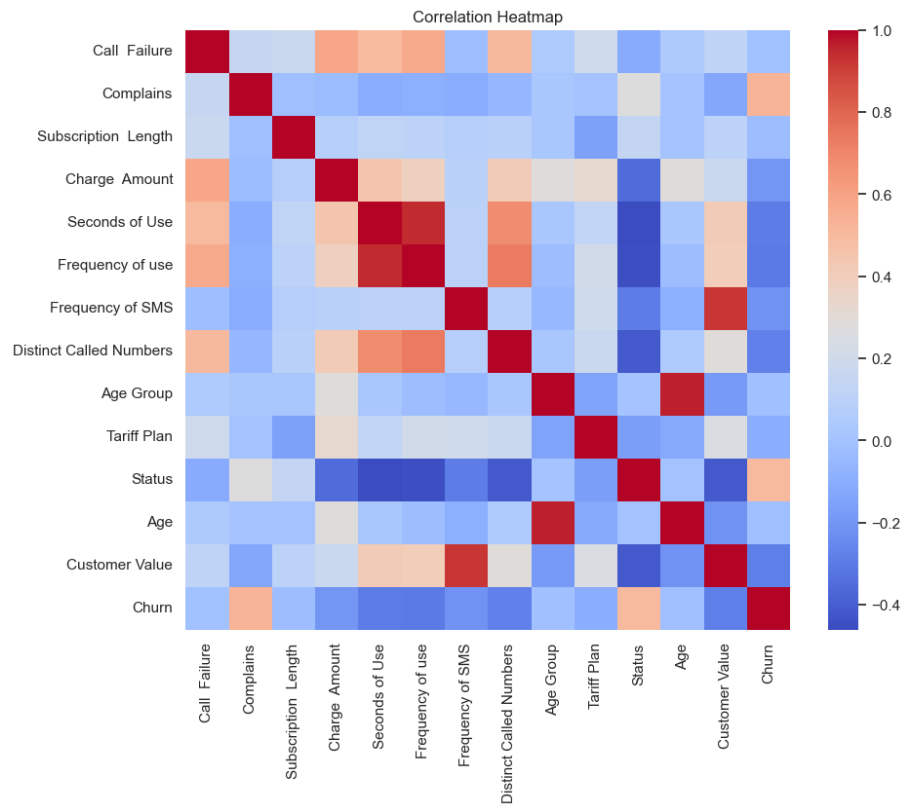


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- **Correlation Heatmap**

→ Highlights correlations between numeric features.

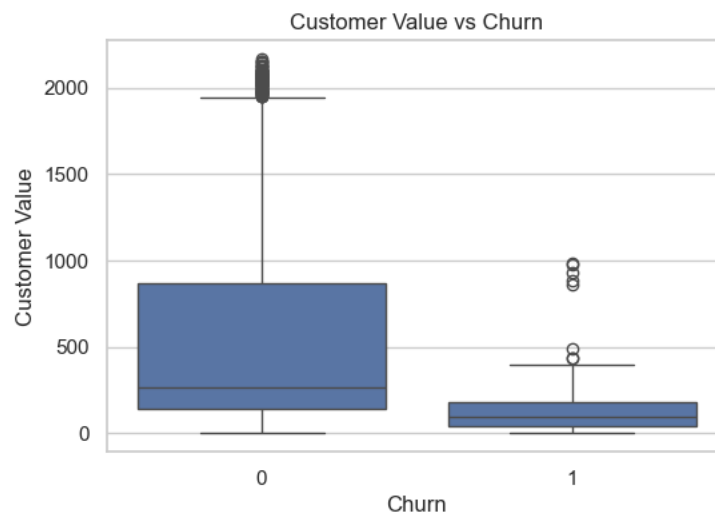
Useful for identifying redundant features or strong predictors of churn.



- **Customer Value vs Churn**

→ Compares the value of customers who stay vs. leave.

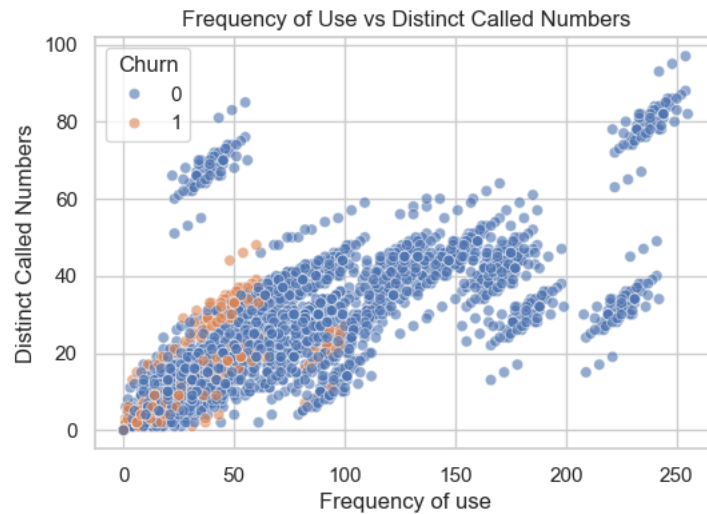
High-value customers are often more loyal and less likely to churn.



## Customer Churn Data Analysis Report

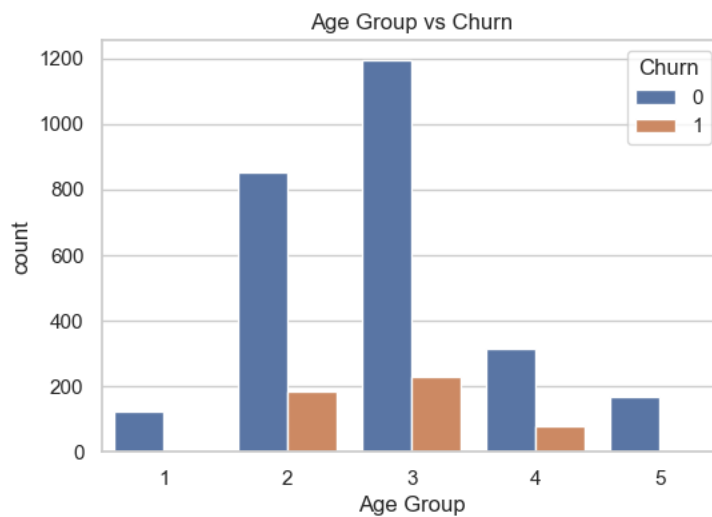
- **Frequency of Use vs Distinct Called Numbers**

→ Shows relationships between usage frequency and number of contacts.  
Reveals different behavioral clusters among users.



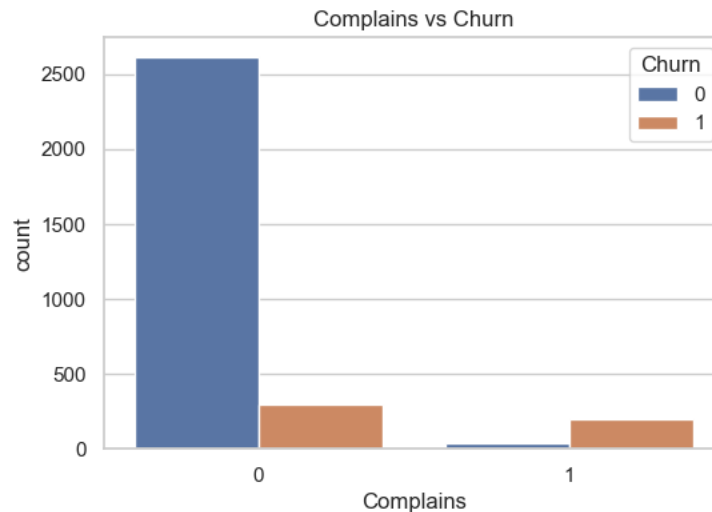
- **Age Group vs Churn**

→ Demonstrates which age groups have higher churn rates.  
Some age groups may show stronger loyalty patterns.



- **Complains vs Churn**

→ Tests if making complaints correlates with higher churn probability.  
Usually, complaining customers have a higher risk of leaving.



## 4. SUMMARY

This exploratory data analysis (EDA) provides a clear understanding of customer characteristics and their relationship with churn.

From the results:

- Low usage and shorter subscriptions increase churn risk.
- Customer complaints strongly correlate with churn.
- Younger or less-engaged users are more likely to leave.

These insights are critical for designing retention campaigns and serve as a foundation for building predictive churn models.

[Dataset's link](#)