

# Telecom Customer Churn Analysis Report

## 1. Introduction

This report presents a comprehensive analysis of customer churn for a telecommunications company serving over 7,000 customers across California. The goal is to identify patterns behind customer attrition (churn), determine which customer groups are most at risk, and provide actionable recommendations to reduce churn and increase retention.

All analysis was conducted using **Power BI**.

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## 2. Data Overview

### Datasets Used:

- **telecom\_customer\_churn.csv**: Main dataset containing demographic, geographic, service, and churn-related attributes for 7,043 customers.
- **telecom\_zipcode\_population.csv** Supplementary dataset containing population data for 1,671 ZIP codes, used to compute churn density by region.

### Data Fields Include:

- Demographics: Gender, Age, Marital Status, Number of Dependents
  - Location: City, ZIP Code, Latitude, Longitude
  - Services: Internet, Phone, Streaming, and Add-ons
  - Billing: Contract Type, Payment Method, Monthly and Total Charges
  - Status: Customer Status (Stayed or Churned), Churn Category, and Churn Reason
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## 3. Data Cleaning and Preparation

The dataset was generally clean and consistent, but several transformations were performed to improve accuracy and analysis quality.

Step	Action	Reason
Duplicate Check	Verified using Customer ID	No duplicates were found ensuring each record represents a unique customer.
Missing Values in Churn Category & Churn Reason	Blank values were replaced with "N/A" and "Not Churned" respectively.	These fields only apply to customers who left; filling them ensures consistency and prevents blanks from affecting visual filters and measures in Power BI.
Missing Values in Internet Charge, Multiple Lines, Average Monthly Long Distance Charges	Null values were replaced with "0"	Use zero (0) because for usage data like charges, a null value generally implies no usage or zero expense for that period, maintaining the accuracy of the total charges.
Data Type Corrections	Converted Monthly Charge, Total Charges, and revenue-related fields to numeric types.	Enables accurate aggregation and calculation.
Calculated Columns Added	- Tenure Group (New, Mid-term, Loyal) - Age Group (Young, Adult, Senior) - High Value Customer (Monthly Charge > 80) - Churn Flag (1 = Churned, 0 = Active)	Supports segmentation and DAX-based analysis in Power BI.

#### 4. Key Metrics Created (DAX Measures)

Measure	Formula (Simplified)	Purpose
Total Customers	Count of all records	Overall customer base
Total Churned Customers	Count where Customer Status = "Churned"	Churn count
Churn Rate (%)	Churned ÷ Total Customers	% of customers who left
Average Monthly Charge	Average of Monthly Charge	Customer spend

<b>Revenue Lost to Churn</b>	Sum of <b>Total Revenue</b> for churned customers	Financial impact
<b>High Value Churn Rate</b>	% of high-value customers who left	Loyalty and profitability insights

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## 5. Data Insights and Storytelling

### Understanding the Challenge

Our customer base stands at 7,043, yet we're experiencing a churn rate of 27%, translating into 1,869 lost customers and an estimated revenue loss of \$3.68 million.

This is more than just a number, it represents lost relationships, dissatisfaction, and potentially preventable exits. The question isn't whether churn is a problem, it clearly is. The real question is: **why are customers leaving, and what can we do about it?**

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### Who is Leaving Us?

- Seniors churn the most (31.4%), followed by Adults and Young users.
- Gender and marital status have minimal impact; males and females churn at nearly equal rates.
- Tenure is a major factor: new customers ( $\leq 12$  months) churn far more than loyal ones.
  - As tenure increases, churn decreases steadily.
  - The majority of churn happens within the first 12 months, signaling onboarding and early experience issues.

### The Role of Services in Churn

- Fiber Optic users churn the most (41%), followed by Cable (26%) and DSL (19%). Customers without internet services churn the least (7%). Indicates potential dissatisfaction or pricing issues with Fiber Optic offerings.
- **Contract Type:**
  - Month-to-month customers churn the most (46%).
  - One-year contracts reduce churn to 11%.

- Two-year contracts drop it further to 3%.

Long-term contracts build customer stickiness.

- **Payment Method:**

- Mailed checks (37%) and bank withdrawals (34%) have the highest churn.
  - Credit card customers (14%) churn the least showing a link between convenience, automation, and loyalty.
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### **Are We Losing Our Most Valuable Customers?**

Unfortunately, yes.

- Churned customers represent \$137.09K in monthly recurring revenue - 32% of total recurring revenue.
- 62.7% of customers are high-value, and many of them are leaving.
- Customers with higher bills, especially Fiber Optic users, are more likely to churn.

Suggests issues around perceived value, pricing fairness, or service delivery.

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## **6. Insights to Action – Key Findings**

Insight	What It Means	Recommended Action
High churn in first-year customers	Weak onboarding experience	Implement a 90-day retention program and milestone rewards.
Seniors churn more	Age impacts churn behavior	Introduce senior-friendly plans and proactive support.
High Fiber Optic churn	Possible quality or pricing issues	Audit network quality, pricing, and satisfaction levels.

Month-to-month contracts churn most	Lack of commitment	Incentivize upgrades to annual or two-year plans.
Credit card users stay longer	Payment method predicts retention	Promote auto-pay and credit card incentives.
High-value customers leaving	Loss of profitable relationships	Flag and retain VIPs with loyalty or concierge programs.
Higher charges = higher churn	Price sensitivity exists	Offer loyalty discounts or bundle services for better value.

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## 7. Strategic Recommendations

### Onboard New Customers with Intent

- Develop a structured 90-day onboarding flow (emails, check-ins, tutorials).
- Reward early tenure milestones (3, 6, 12 months) to encourage loyalty.

### Shift Customers to Annual Contracts

- Promote 1-year and 2-year plans with pricing benefits.
- Offer early renewal or upgrade incentives.

### Target Seniors with Specialized Plans

- Build age-friendly bundles with simplified options.
- Provide dedicated support and personalized retention outreach.

### Incentivize Preferred Payment Methods

- Offer discounts for credit card autopay activation.
- Transition customers from mailed checks to digital payments.

### Flag and Retain High-Value Customers

- Use churn prediction to identify at-risk premium users.
- Launch a “VIP Save Program” with exclusive offers and proactive service.

### **Audit Fiber Optic Experience**

- Conduct customer satisfaction surveys for Fiber users.
- Improve network quality or pricing where dissatisfaction is high.

### **Price with Value in Mind**

- Create bundle plans to increase perceived value.
  - Launch loyalty discounts for long-term, high-billing customers.
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## **8. Final Word**

Churn isn’t just a number, it’s a signal. A signal that parts of the customer journey are not working as they should. Through this analysis, we’ve pinpointed where friction exists, who is most at risk, and what interventions can reduce attrition.

The insights are clear. The path forward is actionable. By focusing on customer experience, retention incentives, and data-driven loyalty strategies, the company can turn churn into opportunity, rebuilding trust, boosting satisfaction, and protecting long-term revenue.