

Power BI Project Report: Customer Churn Analysis Dashboard

Executive Summary

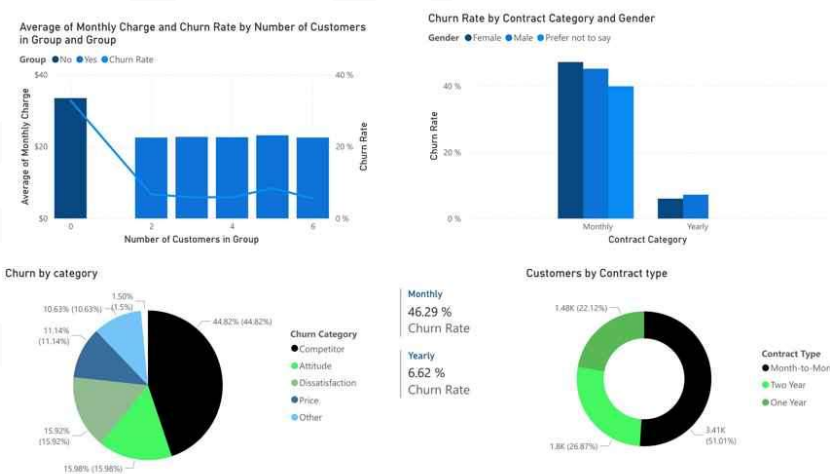
This Power BI project delivers a comprehensive, interactive dashboard analyzing customer churn in a telecommunications context. The dashboard enables business stakeholders to efficiently explore churn rates, underlying causes, demographic influences, and the effects of contract features on customer retention. By transforming raw company data into actionable insights, this analysis supports data-driven strategies for improving customer retention and business performance.

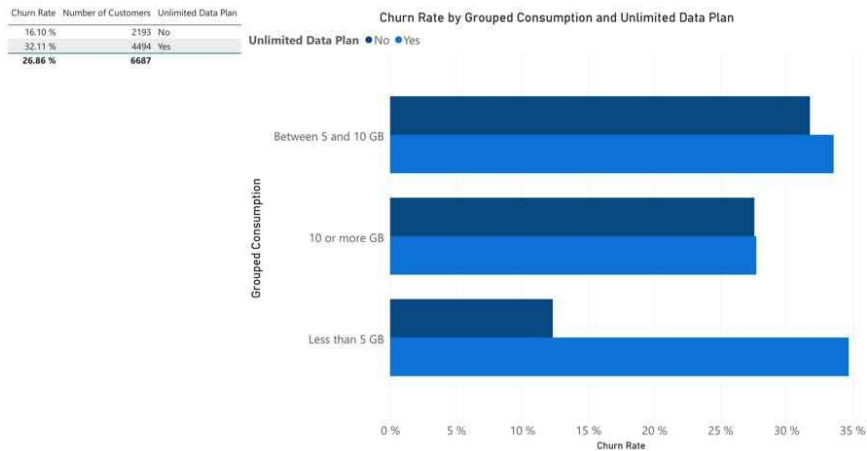
Project Objectives

- Quantitatively assess overall customer churn and identify high-risk segments.
- Uncover and visualize the key drivers behind customer churn.
- Examine how contract type, payment method, and customer demographics impact retention.
- Provide actionable recommendations to reduce churn and boost customer loyalty.

Data Overview

- Dataset Scope:** Telecommunications customer records (6,687 total users), including churn status, contract types, service plans, demographics, and account activity.
- Features Analyzed:** Age, contract length, contract type, payment method, international data activity, service charges, and churn reasons.



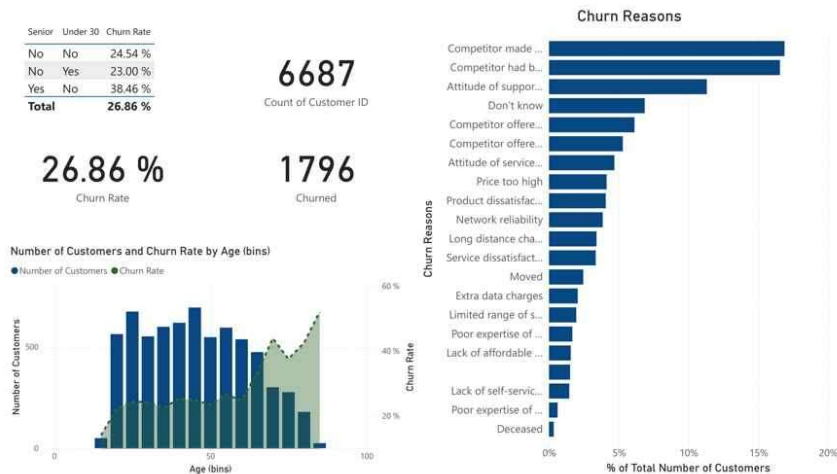


Methodology

- **Data Preparation:** Data extraction, cleaning (missing data, outliers), categorization (e.g., age, consumption bins).
- **Analysis:** Utilized DAX for advanced calculations (e.g., churn rate by group, calculated columns), data modeling to connect related tables.
- **Visualization:** Range of Power BI visual elements including clustered bars, pie charts, line charts, scatter plots, maps, and slicers.
- **Interactivity:** Dynamic filtering by age bins, account duration, contract type, consumption level, and more, delivering granular actionable insights.

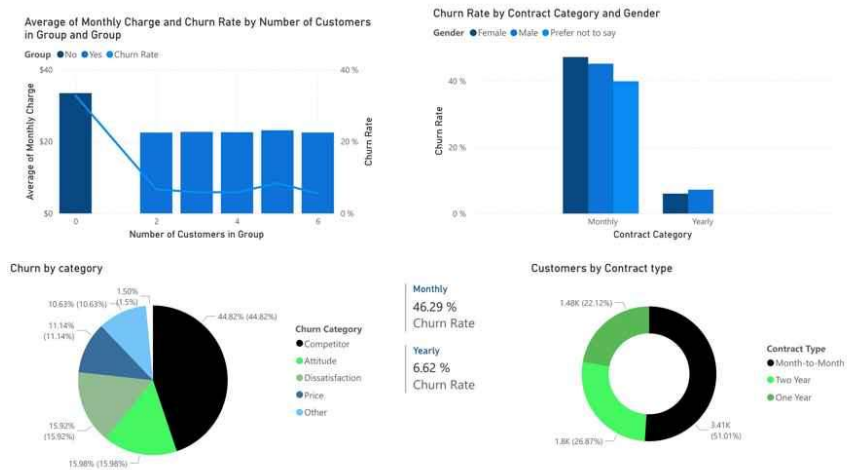
Key Dashboard Components & Insights

1. Churn Overview

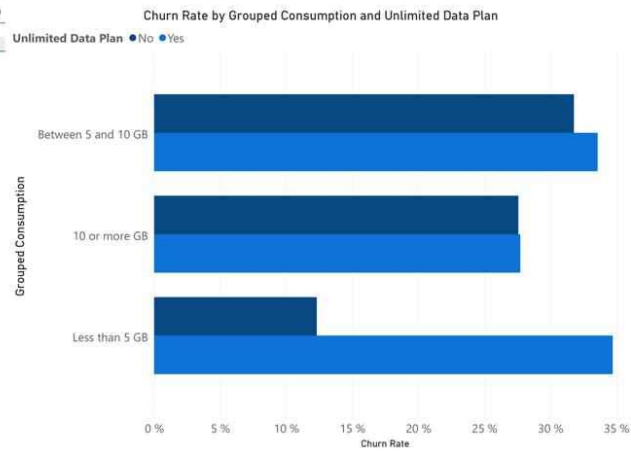


- **Overall Churn Rate:** 26.86% of all customers.^[1]
- **Total Customers:** 6,687; **Churned Customers:** 1,796.^[1]
- **Churn by Demographic:** Senior citizens and non-senior, under-30 segments exhibited distinct churn patterns (senior, non-under 30: 38.46% churn vs under 30: 23%).^[1]

2. Churn Reasons



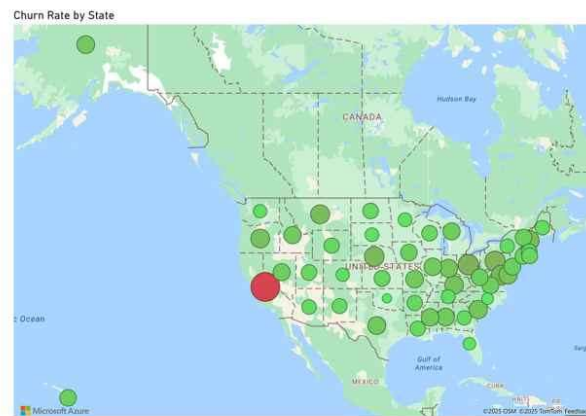
Churn Rate	Number of Customers	Unlimited Data Plan
16.10 %	2193	No
32.11 %	4494	Yes
26.86 %	6687	



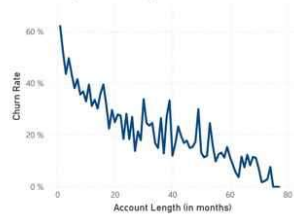
- **Top Drivers:** Offers or actions from competitors are the primary churn reason, followed by issues with support staff attitude and high prices.^[1]
- **Churn Categories:** Largest share is competitor-driven (44.82%), followed by dissatisfaction and price factors.^[2]

3. Segment Deep-Dives

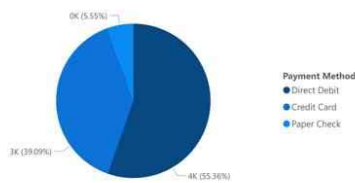
Intl Active	no	yes	Total
No	20.01 %	71.19 %	22.21 %
Yes	40.34 %	7.59 %	34.31 %
Total	27.07 %	24.88 %	26.86 %



Churn Rate by Account Length (in months)



Number of Customers and Churn Rate by Payment Method



Churn Rate by Account Length (in months) and Contract Type

Contract Type ● Month-to-Month ● One Year ● Two Year

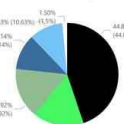


26.86 %
Churn Rate

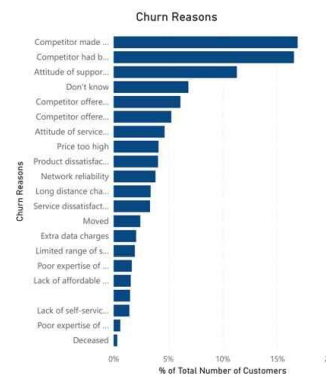
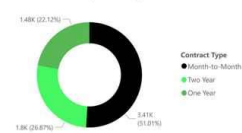
6687
Count of Customer ID

1796
Churned

%GT Count of Churn Label by Churn Category



Count of Customer ID by Contract Type

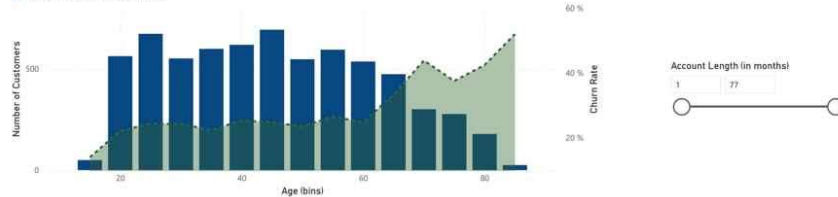


Churn Rate by State



Number of Customers and Churn Rate by Age (bins)

● Number of Customers ● Churn Rate



Average of Monthly Charge and Churn Rate by Number of Customers in Group and Group

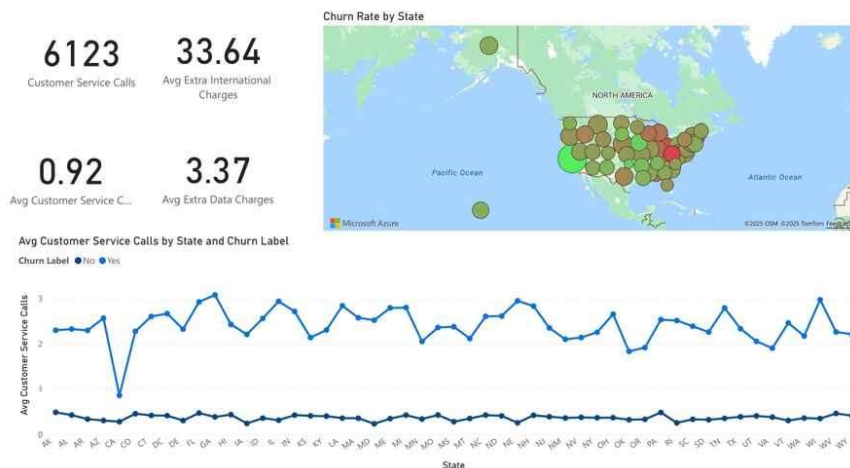
Group ● No ● Yes ● Churn Rate



- **Age and Churn:** Churn rate rises with age, peaking in the oldest groups.^{[3][1]}
- **Account Tenure:** Longer account tenure corresponds to lower churn rates—churn drops sharply after customers pass 24+ months.

- **Contract Type:**
 - Month-to-month contracts show the highest churn (46.29%), while yearly contracts retain better (6.62% churn).^[2]
- **Payment Method:** Minor churn variation exists across payment methods, with paper check exhibiting slightly higher churn.
- **Unlimited Data Plan:** Customers with unlimited data churn at a higher rate compared to limited plan users (32.11% vs 16.10%).^[4]
- **Consumption:** Higher data consumption correlates with increased churn—particularly between 5–10GB, regardless of unlimited plan status.^[4]

4. Geographic Analysis

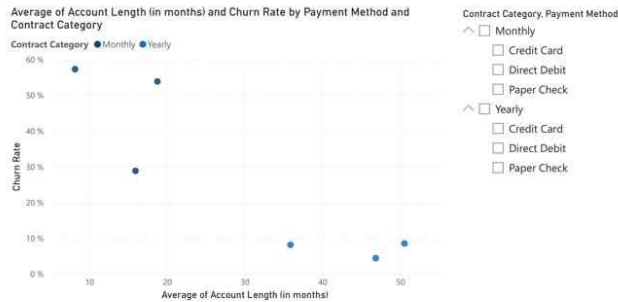


- The dashboard's map reveals geographic disparities: highest churn clusters in certain states (e.g., California).^[3]

5. Additional Behavioral Metrics

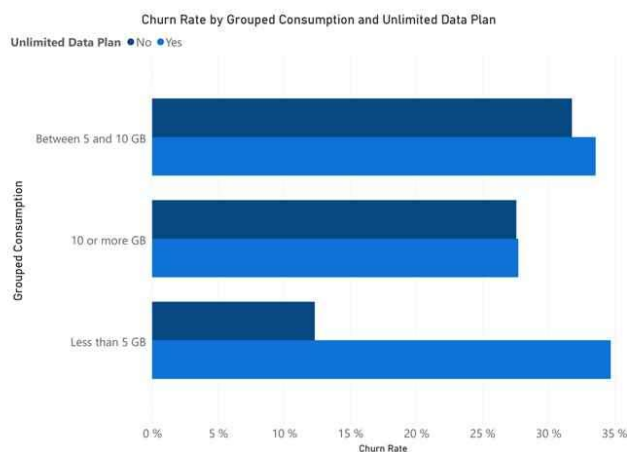
6123
Customer Service Calls

0.92
Avg Customer Service Calls



33.64
Avg Extra International Charges

3.37
Avg Extra Data Charges



- **Service Calls:** Higher average service calls among churned users (visible in state-by-state breakdowns).
- **Extra Charges:** Higher extra international/data charges tend to predict churn.

Technical Implementation Highlights

- **Advanced DAX:** Used for custom churn metrics, conditional formatting, dynamic category segmentation, and interactive slicers.
- **Data Model:** Connected user, contract, behavior, and financial tables in a star schema for flexible slicing/dicing.
- **Interactive Visuals:** Users can drill down by demographic, account history, contract, and geography.
- **Automated Refresh:** Dashboard designed for automated scheduled data refresh for live reporting (where data source supports it).

Recommendations & Value Delivered

- **Reduce Churn:** Focus retention efforts on high-risk groups: month-to-month users, high data consumers, and areas with high competitor activity.
- **Contract Strategy:** Incentivize annual contracts to lock in low-churn segments.
- **Service Improvement:** Address top dissatisfaction factors—especially customer support attitude.
- **Pricing:** Re-evaluate data plan and extra charges to improve perceived value.

Sample Dashboard Visualizations

Churn Summary & Causes

Segment Analysis: Contract, Age, and Geography

Churn & Consumption

Churn by State & International Activity

(More available on request—portfolio can include all standard visual slices as shown above.)

Conclusion

This Power BI dashboard offers a compelling demonstration of real-world data analysis, technical BI skill, and the ability to translate insights into business value. By exploring churn holistically, the project provides a model for advanced customer analytics in the telecom sector or any subscription-based business.