



Customer Churn Analysis Project

Identifying why customers leave and building strategies to improve retention.



Project Scope & Dataset

500

Total Customers

Telecom customer
records analyzed

13

Data Columns

Demographic, service,
billing info

3

Dashboard
Pages

Interactive Power BI
insights

Dataset includes customer demographics, service usage patterns, contract types, payment methods, and churn status.

Data Cleaning & Preparation

Python Processing Steps

- Removed duplicates
- Converted data types
- Handled missing values with mean, median, mode
- Created churn_flag and is_active_flag features

Missing Value Strategy

Monthly charges: filled with mean

Tenure months: filled with median

Total charges: filled with mode

Internet service: marked as 'Unknown'

Exploratory Data Analysis



Churn Distribution

Bar plot showing overall churn patterns across customer base



Payment Method Analysis

Churn rate variations by payment type



Monthly Charges

Box plot comparing charges between churned vs active customers



SQL Analysis Insights

01

Churn by Contract Type

One Year contracts: 32.3% churn rate (highest)

02

Churn by Payment Method

Cash payments: 32.8% churn, UPI: 22.8% (lowest)

03

High-Risk Segments

Top 5 churned customers with charges \$1400-\$1500

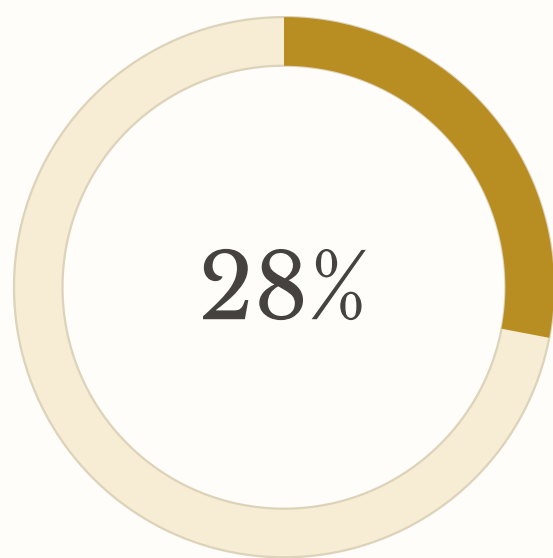
04

Tenure Comparison

Churned: 36.84 months avg, Active: 36.07 months avg

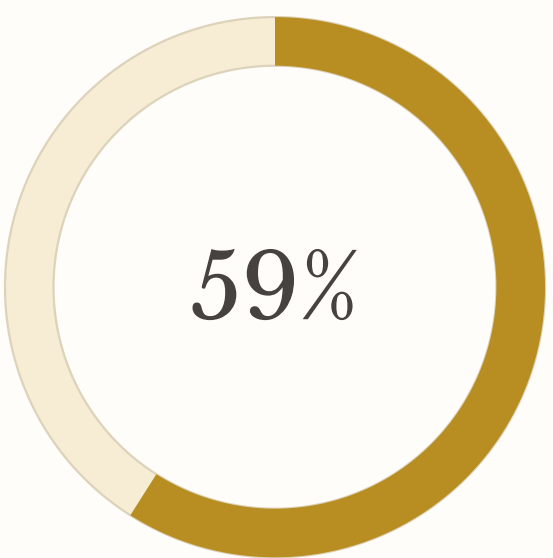


Power BI Dashboard Overview



Overall Churn Rate

139 of 500 customers churned

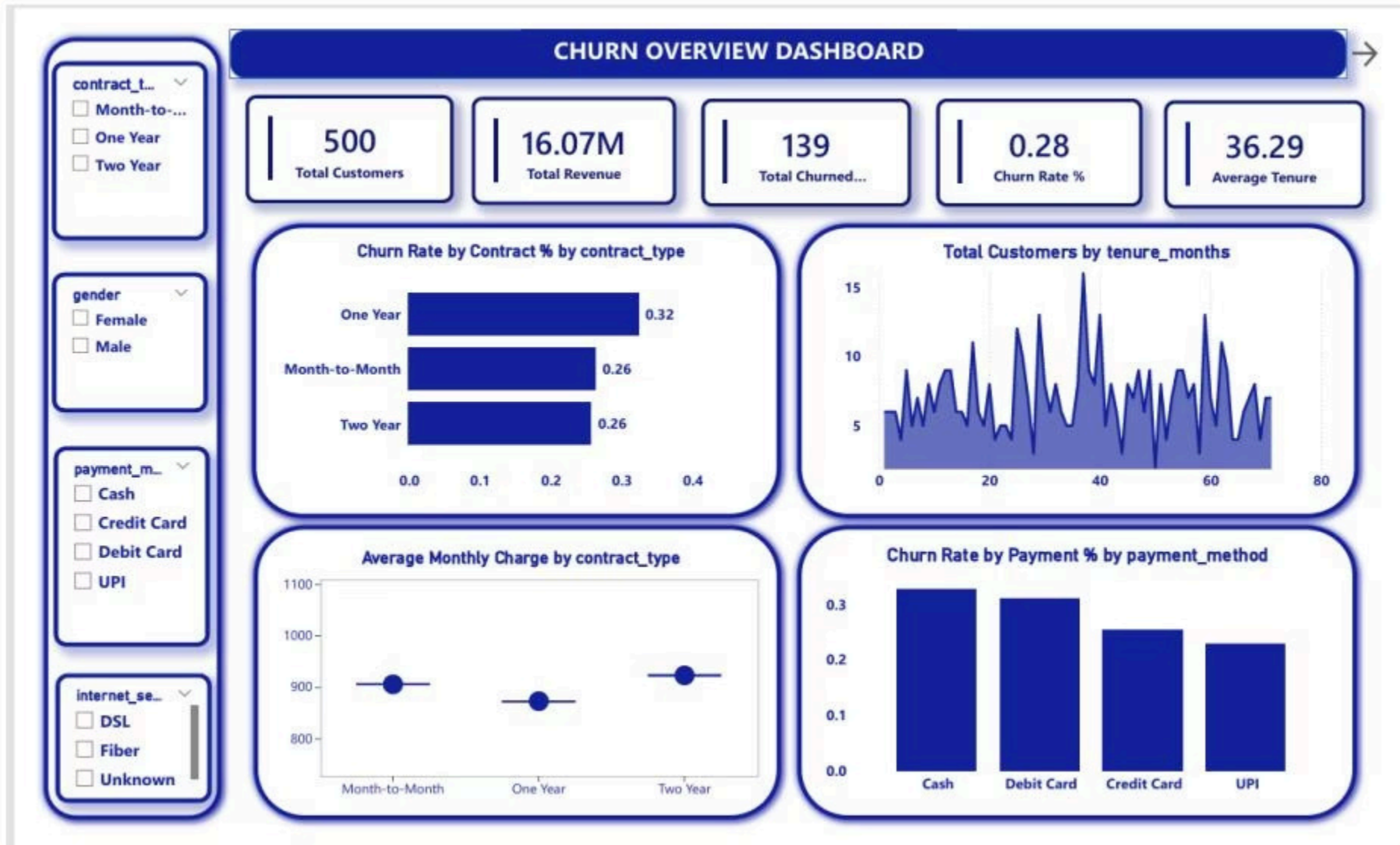


Risk Score

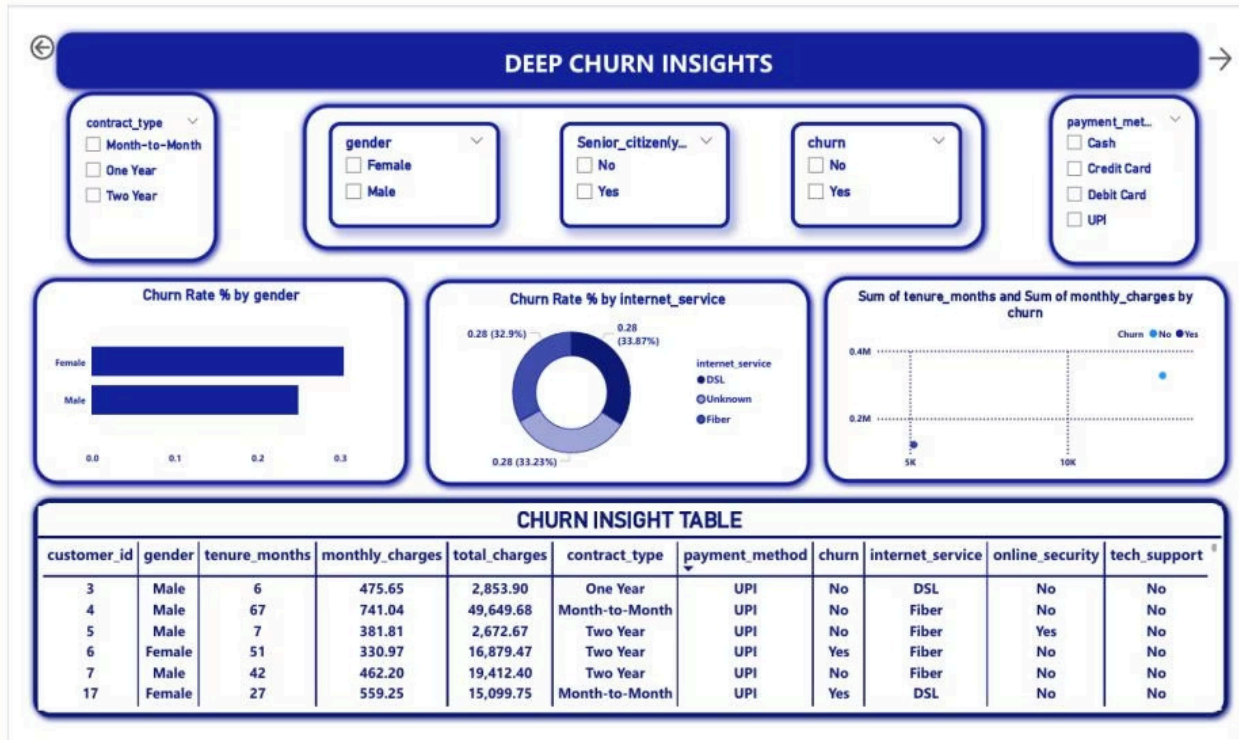
Average customer churn risk indicator

Total Revenue: \$16.07M across all customers

Average Tenure: 36.29 months



Deep Churn Insights



Key Findings

- Gender: Equal churn rate (28%) for both
- Internet service: Consistent 28% across DSL, Fiber, Unknown
- Tenure impact: Clear correlation with churn behavior

Customer Risk Profile Analysis



0-12 Months

Highest churn risk segment (70 customers)

12-24 Months

Moderate risk (79 customers)



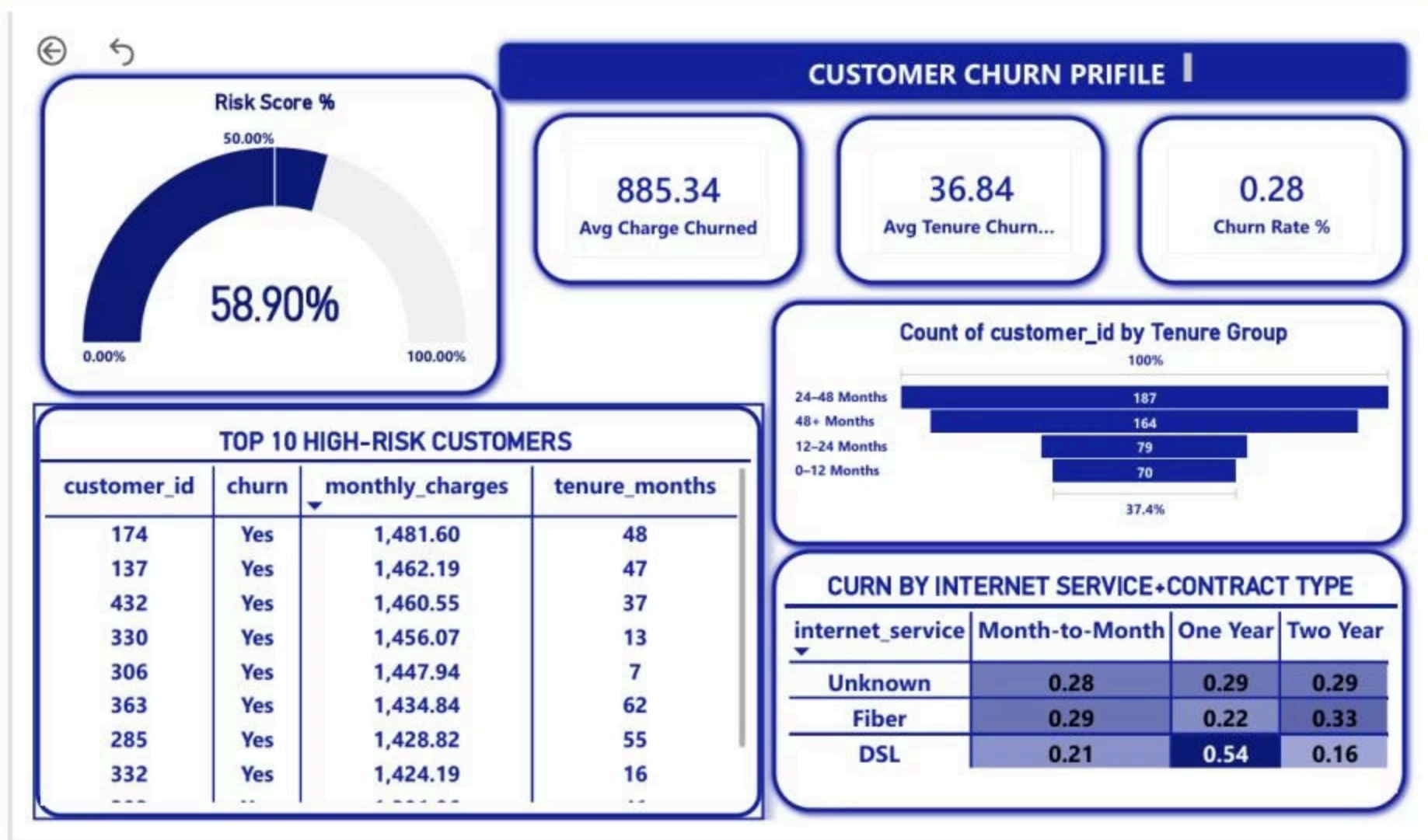
24-48 Months

Lower risk (164 customers)

48+ Months

Lowest churn (187 customers)

Average charge of churned customers: \$885.34 — significantly higher than typical customer



Critical Insights

Contract Flexibility = Higher Churn

Month-to-Month: 32% churn vs 26% for long-term contracts

Fiber Service Risk

Fiber internet users show highest churn percentage

Payment Method Matters

UPI and Debit Card users churn more; Credit Card users most loyal

Early Tenure Vulnerability

0-12 month customers are most likely to leave

Price Sensitivity

High monthly charges (\$1400-\$1500) strongly correlate with churn

Strategic Recommendations



Enhance Fiber Experience

Improve service quality and customer support for Fiber users



Promote Auto-Pay

Incentivize Credit Card and bank transfer payments



Early Customer Support

Target 0-12 month customers with onboarding programs



High-Value Retention

Special offers for customers with high monthly charges



Churn Alert System

Build predictive model to identify at-risk customers early

Deliverables: Clean dataset • Python code • SQL queries • Power BI dashboard • Full documentation