

DATA ANALYTICS

Telco Customer Churn Analysis

Identifying key factors driving customer attrition through data-driven insights to improve retention strategies.



Made with GAMMA

Project Overview



Objective

Identify key factors leading to customer attrition in telecommunications



Approach

Analyze service usage, contract terms, and billing methods



Outcome

Data-driven recommendations to improve customer retention

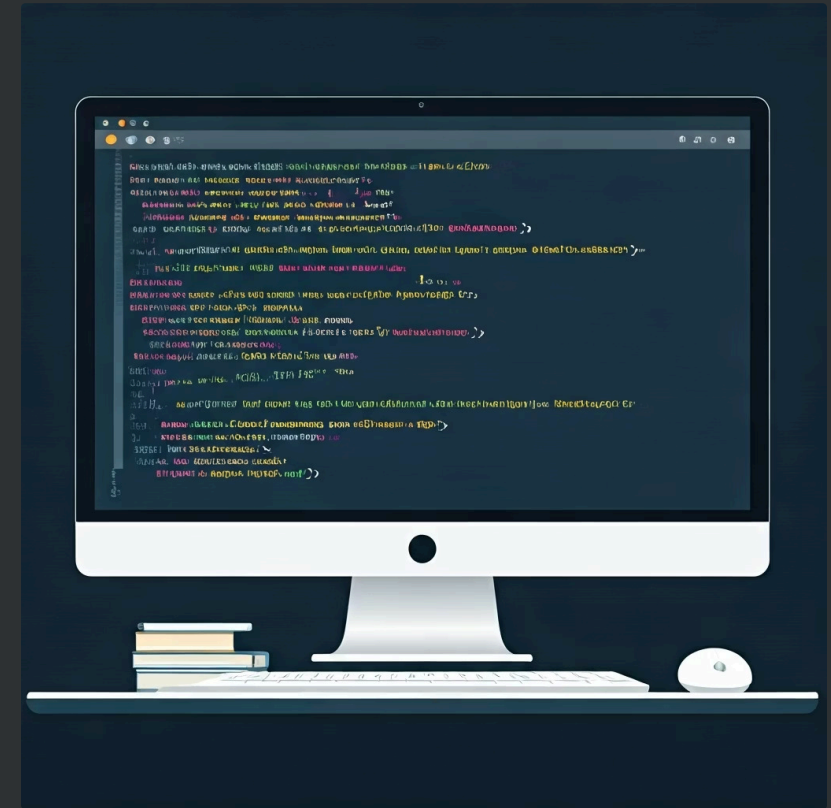


Data Cleaning & Preprocessing

Python & Jupyter Notebook

Rigorous cleaning process using pandas and numpy:

- Converted TotalCharges from string to numeric float
- Identified 11 null values from new customers (0 tenure)
- Removed 0 tenure records for data consistency
- Final dataset: 7,032 records





Database Integration



Cleaned Data

7,032 records processed in Python



MySQL Migration

Data transferred via sqlalchemy



SQL Queries

High-performance relational analysis



KEY INSIGHT #1

Contract Types & Churn Risk

Contract duration is the **primary indicator** of churn risk.

42.7%

Month-to-Month

1,655 churned
customers - highest
risk group

166

One-Year
Contracts

Significantly better
retention

48

Two-Year
Contracts

Highest loyalty from
1,685 customers

KEY INSIGHT #2

Internet Service Impact

Technology type strongly correlates with customer attrition likelihood.



Fiber Optic

1,297 churns - highest churn volume



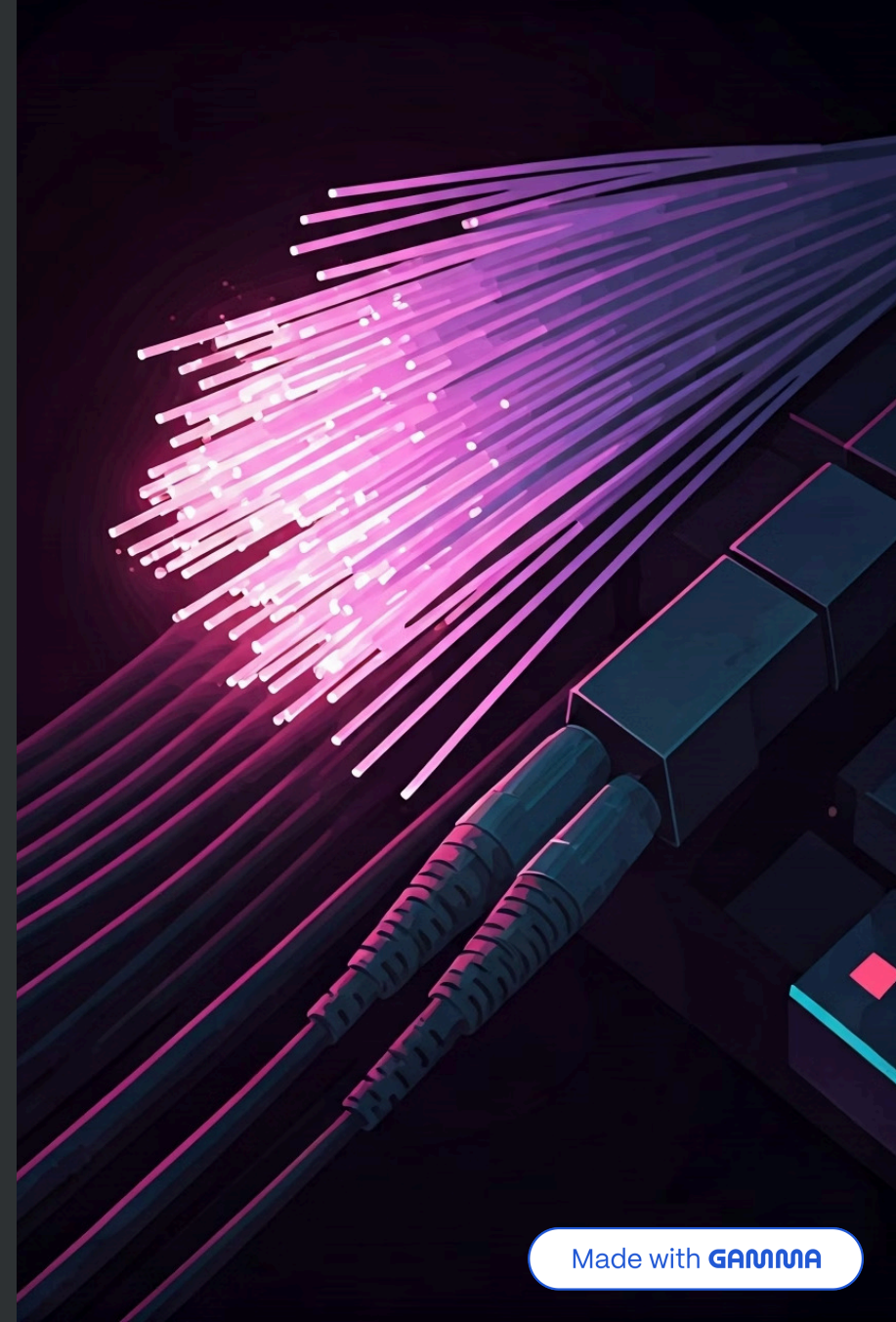
DSL

459 churns - more stable customer base



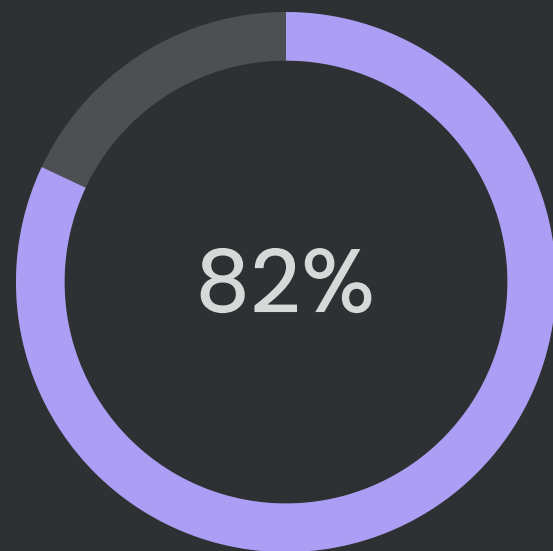
No Internet Service

Lowest churn - less sensitive to competitive offers



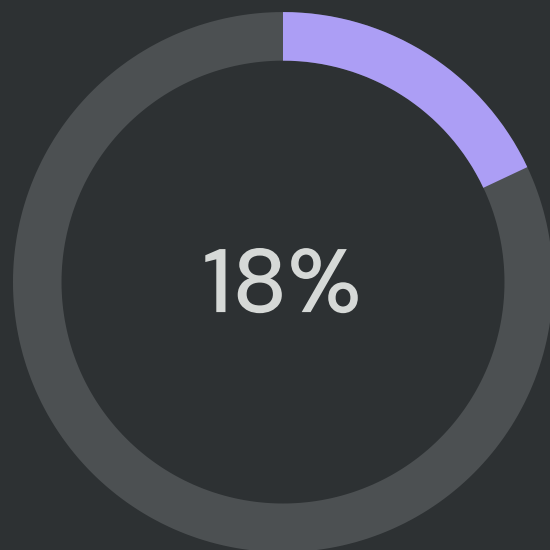
The Value of Technical Support

Proactive support is a **key retention tool** that significantly increases customer lifetime value.



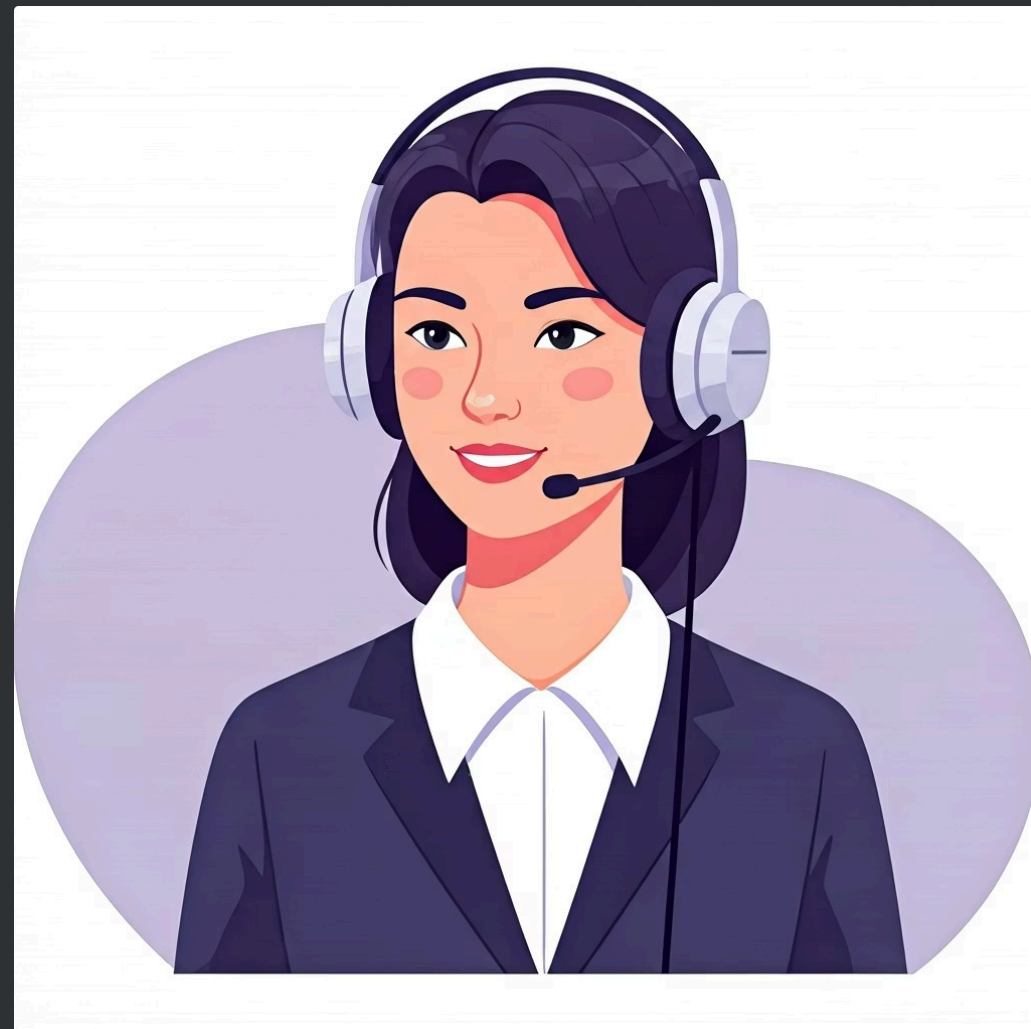
High Risk

1,446 churns without TechSupport



Low Risk

Only 310 churns with TechSupport



Interactive Dashboard

Power BI dashboard transforms cleaned data into visual KPIs and charts, highlighting critical churn drivers for stakeholder reporting.

- ❏ The dashboard provides real-time insights into contract types, service categories, and customer behavior patterns.



Strategic Recommendations

01

Incentivize Long-Term Contracts

Offer discounts or service upgrades to migrate Month-to-Month customers to at least one-year plans

03

Support Upselling

Package TechSupport as standard feature or low-cost add-on to reduce service-related frustration

02

Fiber Optic Quality Audit

Investigate why Fiber Optic customers churn at higher rates compared to DSL



Tools & Technologies



Python

Data cleaning and handling missing values



SQL (MySQL)

Complex data aggregation and churn rate calculation



Pandas/NumPy

Feature engineering and data type conversion



Power BI

Interactive dashboard for visual KPIs and stakeholder reporting

