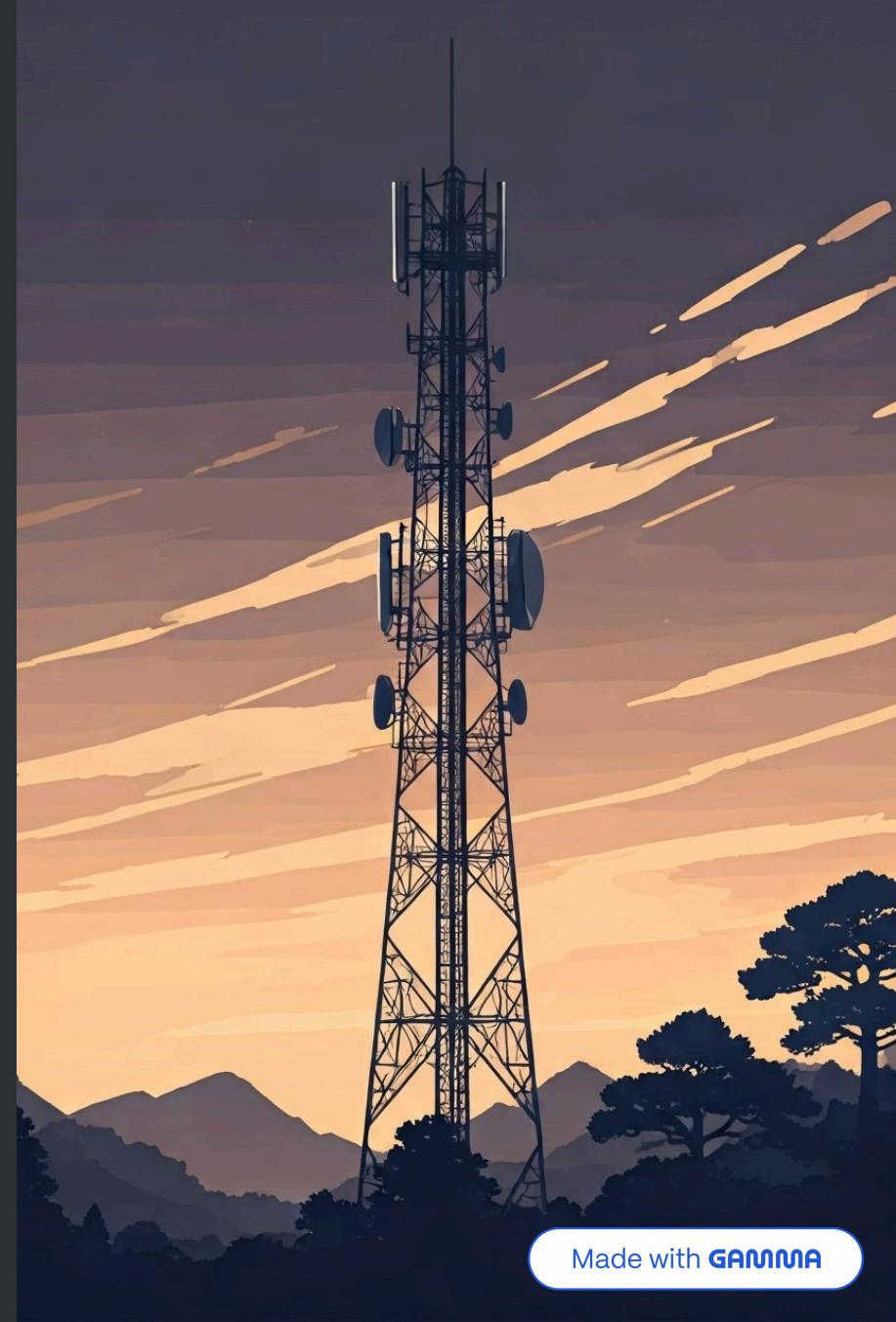




# Telco Customer Churn Analysis

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



# 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

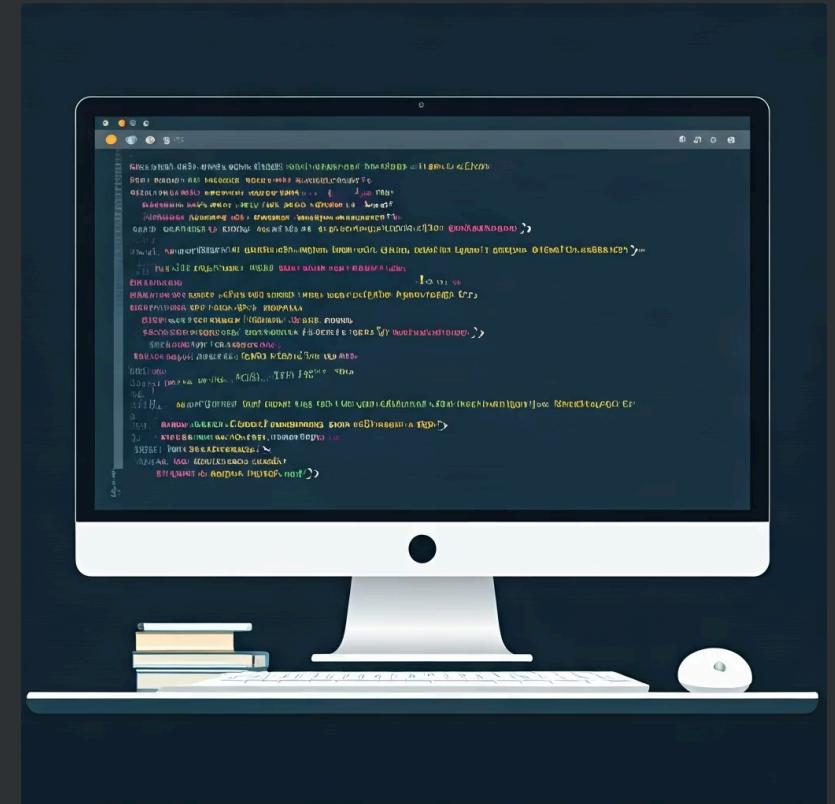


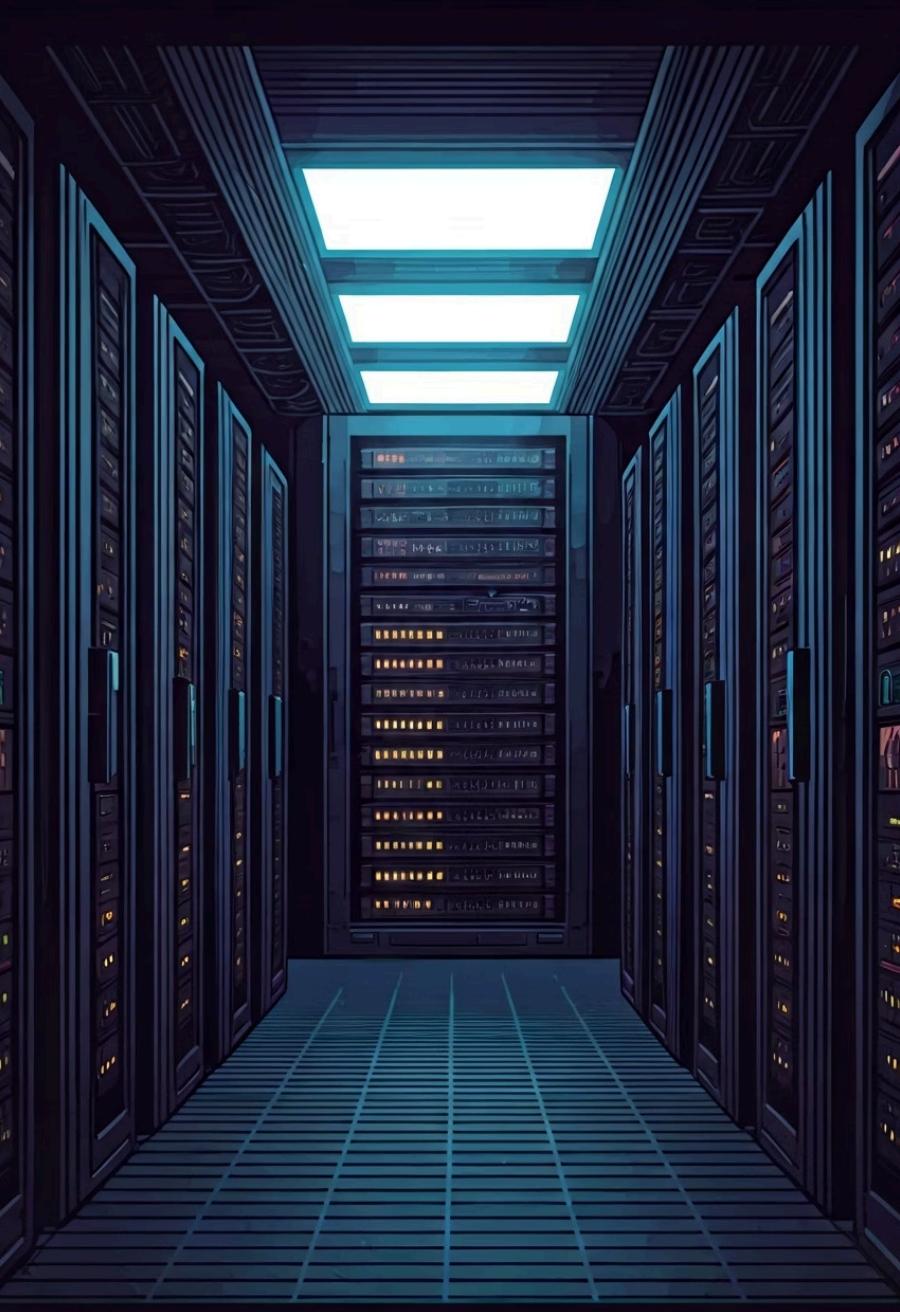
# Data Cleaning & Preprocessing

## 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

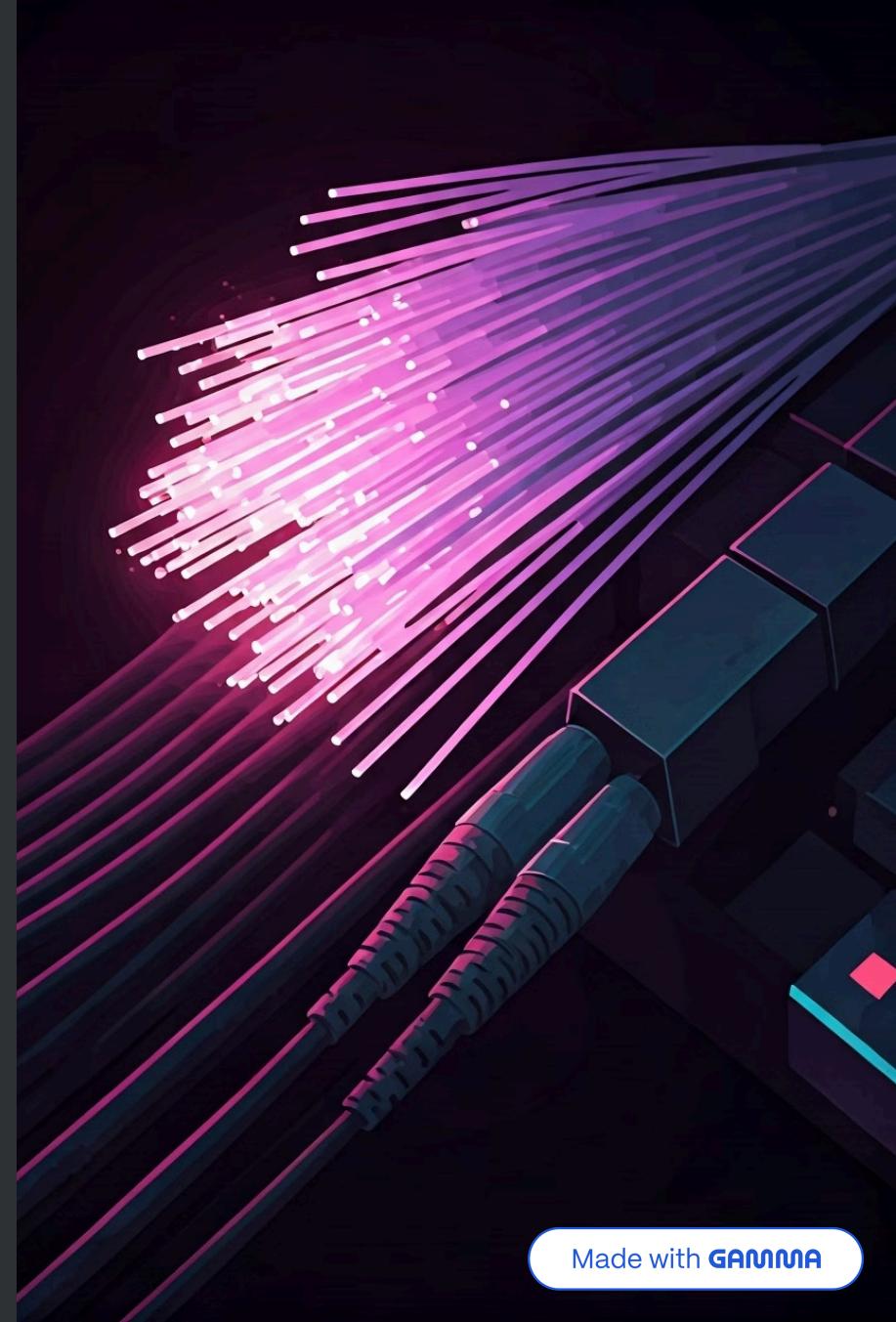
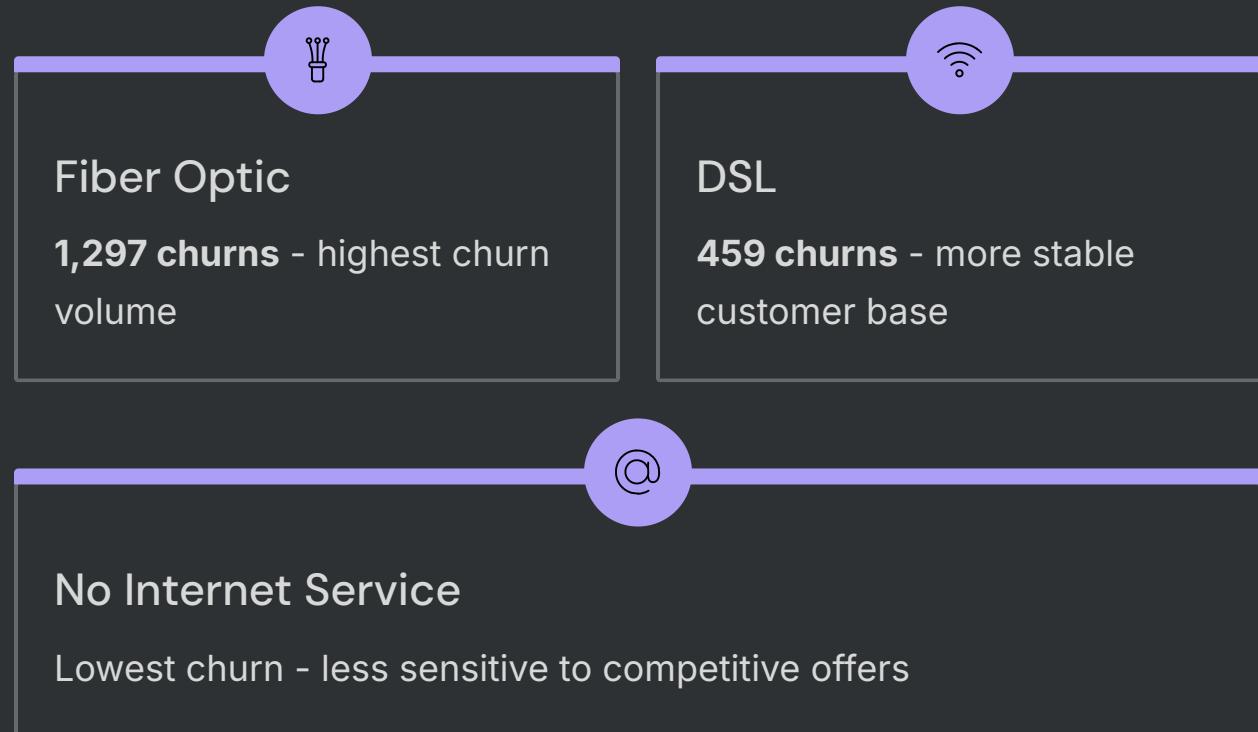
48

Two-Year  
Contracts  
Highest loyalty from  
1,685 customers

KEY INSIGHT #2

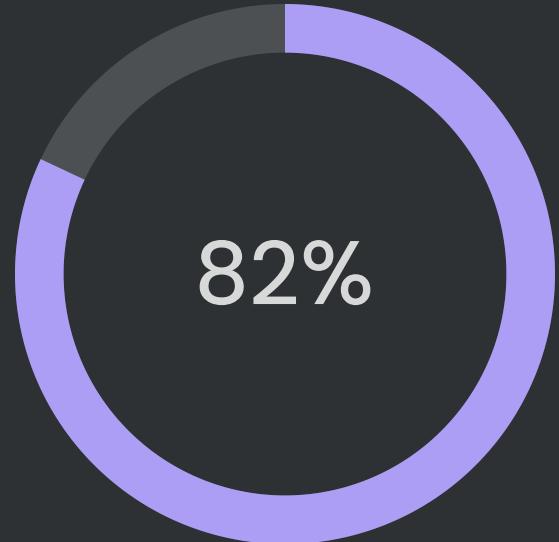
# Internet Service Impact

Technology type strongly correlates with customer attrition likelihood.



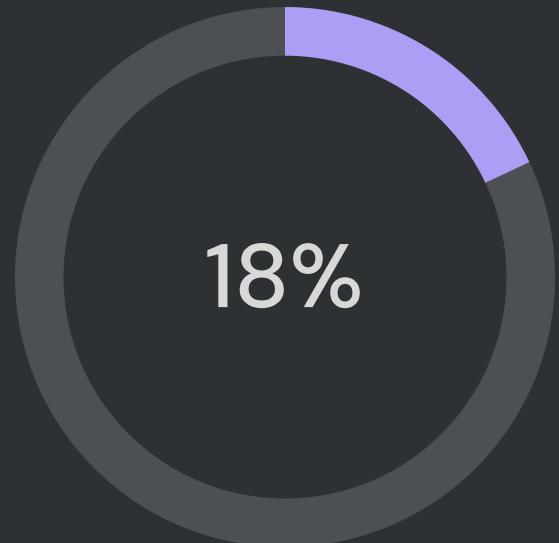
# The Value of Technical Support

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



High Risk

1,446 churns without TechSupport



Low Risk

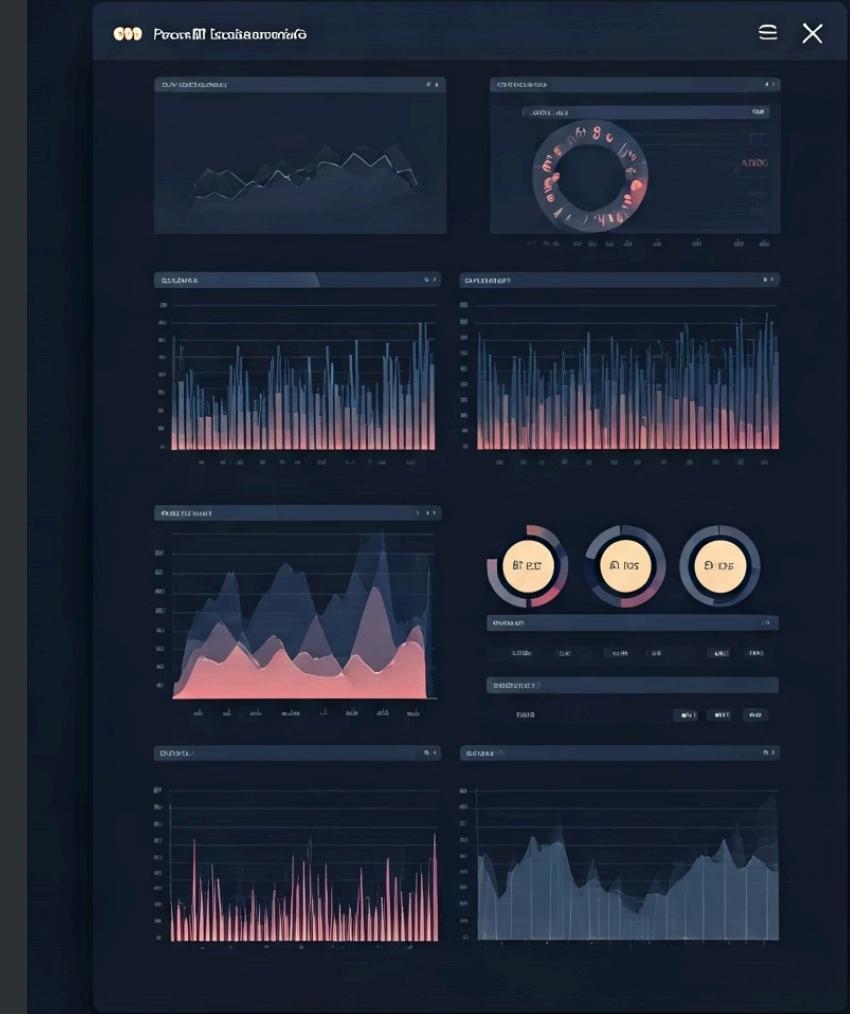
Only 310 churns with TechSupport



# 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

02

## Fiber Optic Quality Audit

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

03

## Support Upselling

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



# 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

