

# Churn\_analysis project file

## Data Preprocessing

- Loaded dataset from **Telco-Customer-Churn.csv**.
  - Fixed "**TotalCharges**" column by replacing spaces with **0** and converting to **float**.
  - Converted "**SeniorCitizen**" from numeric (0/1) to categorical (**Yes/No**).
  - Checked:
    - **Missing values** – none found.
    - **Duplicates** – no duplicate **customerID**.
    - Dataset contained **7043 customers** and **21 columns**.
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## Key Findings & Insights

### 1. Overall Churn

- **Churn Rate**: About **26.54%** of customers have churned.
- **Visualization**: Both count plot and pie chart confirm that **most customers stay**, but a significant minority leave.

### 2. Gender

- Churn distribution between **Male** and **Female** customers is almost **equal**.
- Gender does not significantly influence churn.

### 3. Senior Citizens

- Only **16.2%** of customers are **Senior Citizens**.
- Churn rate among seniors is **41.7%**, higher than **23.5%** for non-seniors.

### 4. Tenure

- Customers with **shorter tenure** are more likely to churn.
- Majority of churn happens within **first 12 months**.

## 5. Contract Type

- **Month-to-Month** contracts have the **highest churn** (~43%).
- **Two-year contracts** have the lowest churn (~2.8%).

## 6. Services

- Customers lacking services like **OnlineSecurity**, **TechSupport**, and **DeviceProtection** have **higher churn rates**.
- Fiber optic internet users churn more than DSL users.

## 7. Payment Method

- **Electronic check** users churn the most (~45%).
- Customers paying via credit card or bank transfer churn less.

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## Main Insights

- **High-risk churn segments:**
  - Month-to-month contracts
  - Senior citizens
  - Fiber optic internet users
  - Customers without security or tech support services
  - Electronic check payment method users
- **Retention strategies** should focus on offering **long-term contracts, bundling security/tech support, and incentives for online payment upgrades**.