Customer Churn Analysis Summary

# 📊 Dataset Overview

- Dataset: Customer Churn.csv  
- Total Customers: 7043  
- Target Column: Churn (Yes/No — whether the customer has churned)  
- Features: Contract type, payment method, internet services, gender, senior citizenship, etc.

# 🔍 Key Preprocessing Steps

- 'TotalCharges' column had some empty strings, which were replaced with 0 and then converted to float.  
- 'SeniorCitizen' (0/1) was converted to 'no'/'yes' for better readability.  
- Checked for:  
 - Null values → ✅ None found  
 - Duplicates → ✅ None found

# 📈 Churn Distribution

- Churned Customers: 26.54%  
- Stayed Customers: 73.46%  
- This was visualized using a pie chart.

# 📊 Categorical Analysis

1. Contract Type

* - Customers on 1-month contracts churn the most.
* - Suggestion: Incentivize longer-term contracts to reduce churn.

2. Internet Service

* - A significant number of users do not use internet services (1526 people).

3. Payment Method

* - Customers using Electronic Check are churning at a higher rate.
* - These customers often use Fiber Optic internet, indicating dissatisfaction.

4. Fiber Optic Users

* - Higher churn rate observed among fiber optic users → potential quality or pricing issues.

# 📊 Visual Breakdown by Features

The notebook plots count plots for multiple categorical variables like:  
- PhoneService  
- MultipleLines  
- InternetService  
- OnlineSecurity  
- OnlineBackup  
- DeviceProtection  
- TechSupport  
- StreamingTV  
- StreamingMovies  
  
Each bar plot shows:  
- Total number of customers per category  
- Number of churned vs. non-churned

# 🧠 Insights Summary

|  |  |  |
| --- | --- | --- |
| Feature | Churn Pattern Observed | Actionable Insight |
| Contract | 1-month plans → higher churn | Promote longer contracts |
| Payment Method | Electronic check users churn more | Introduce incentives for using other methods |
| InternetService | Fiber optic users churn more | Investigate network quality & customer feedback |
| SeniorCitizen | Slightly more churns among senior citizens | Offer tailored plans for senior users |
| TechSupport | Lack of tech support correlates with higher churn | Improve tech support services |

# ✅ Next Suggestions

1. 1. Feature Engineering: Create new variables like tenure groups, monthly charges segments.
2. 2. Modeling: Apply logistic regression or decision trees to predict churn.
3. 3. Customer Retention Plan: Use insights to segment and retain vulnerable customers.