Summary and Recommendations

📊 Executive Summary: Customer Churn Analysis

This report analyzes customer churn patterns for a telecom service provider using a dataset of **7,043 customers**. The aim is to identify key factors contributing to churn, quantify their impact, and recommend data-driven strategies to reduce churn and improve customer retention.

🧼 Dataset Overview & Cleaning

Dataset: `Customer Churn.csv`
Total Records: 7,043 customers
Total Features: 21 columns
Target Variable: `Churn` (binary: Yes/No)

Cleaning & Preprocessing:

- Converted `TotalCharges` from object to float after cleaning blank values

- No missing/null values

- No duplicate `customerID`s

- Transformed binary values (e.g., `SeniorCitizen`) to readable `"Yes"`/`"No"`

📈 **Key Analysis & Findings**

1. Churn Distribution

- **Churned Customers**: 1,869 (26.5%)

- **Retained Customers**: 5,174 (73.5%)

- 📌 Insight: This is a substantial churn rate that needs focused action

2. Senior Citizen vs. Churn

- **Senior Citizens (Yes)**: 1,142 (16.2%) → ~41% churned

- **Non-Senior Citizens (No)**: 5,901 (83.8%) → ~24% churned

- 📌 Insight: Senior citizens churn almost **twice as much** as younger customers

3. Tenure vs. Churn

- High churn observed in customers with **tenure ≤ 2 months**

- Very low churn in customers with **tenure ≥ 24 months**

- 📌 Insight: Customers retained for longer are significantly less likely to leave

4. Contract Type vs. Churn

- **Month-to-month**: ~55% of customers → **~43% churn rate**

- **One-year contract**: ~20% → **~11% churn rate**

- **Two-year contract**: ~25% → **~3% churn rate**

- 📌 Insight: Longer contracts greatly reduce churn likelihood

📡 Service-Based Insights

Analysis was performed on features like:

- `PhoneService`, `MultipleLines`

- `InternetService`, `OnlineSecurity`, `OnlineBackup`

- `DeviceProtection`, `TechSupport`

- `StreamingTV`, `StreamingMovies`

Key Observations:

- Customers **without OnlineSecurity or TechSupport** have significantly **higher churn**

- **Fiber optic users** churn more than DSL users

- Mixed impact from streaming services — may depend on bundled offers

📌 Insight: Adding protective services leads to better retention

🧮 Summary Table

Feature	High Churn Risk	Safe Segment
Senior Citizen	Yes	No
Tenure	< 3 months	> 24 months
Contract Type	Month-to-month	1–2 year
OnlineSecurity	No	Yes
TechSupport	No	Yes
InternetService	Fiber Optic	DSL

✅ Recommendations

1. **Focus on retaining**:

- ○ Senior citizens

- ○ New customers (tenure < 3 months)

- ○ Month-to-month subscribers

2. **Encourage long-term contracts** with discounts or benefits

3. **Upsell bundled services** like OnlineSecurity and TechSupport

4. **Build a churn prediction model** using features like:

- ○ Contract type, Tenure, MonthlyCharges, InternetService, SeniorCitizen

5. **Investigate additional churn drivers**, such as:

- ○ Payment method

- ○ Regional differences (if location data is added)