Summary of Analysis

The Telco Customer Churn dataset reveals that churn is not evenly distributed, with most customers staying but a notable portion leaving. Churn patterns are strongly linked to contract type, internet services, billing/payment methods, and support services. Demographic factors such as gender do not significantly impact churn, while senior citizenship and family status (partner/dependent) have some influence.

Detailed Analysis Insights

1. **Class Imbalance**
   - Most customers **do not churn**.
   - This indicates imbalance, meaning churn prediction models need balancing techniques (SMOTE, class weights, etc.).
2. **Demographics (SeniorCitizen, Partner, Dependents, Gender)**
   - **Senior Citizens churn more often** compared to younger customers.
   - Customers **without partners or dependents churn more**, suggesting family commitments help retain customers.
   - **Gender has little to no effect** on churn — both male and female churn rates are similar.
3. **Internet Services & Support**
   - **Fiber optic internet users churn at a higher rate** than DSL or no-internet users.
   - Lack of **Online Security, Tech Support, Device Protection, and Online Backup** is strongly linked with higher churn.
   - Customers without these add-ons are more likely to leave, implying service bundles reduce churn.
4. **Contract Type**
   - **Month-to-month contracts show very high churn.**
   - **Two-year contracts have the lowest churn**, highlighting the importance of long-term commitments.
   - Contract type is one of the **most powerful predictors of churn**.
5. **Billing & Payment Methods**
   - Customers on **paperless billing churn more** than those on mailed billing.
   - **Electronic check payments have the highest churn**, while credit card and bank transfers have lower churn rates.
   - Payment method preference may indicate customer stability/loyalty.
6. **Streaming Services (TV, Movies)**
   - Streaming add-ons do **not significantly influence churn** compared to security and contract-related services.

Overall Insights

- **Contract type, payment method, and internet services** are the strongest churn drivers.
- **Support services (security, tech support, backup)** greatly reduce churn risk.
- **Demographics** (like gender) matter less, but senior status and family connections (partner/dependents) show some churn influence.