

# Summary and Recommendations

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## 1. Dataset Overview:

The dataset contains critical customer demographic information and service usage patterns:

- **Key Variables:**
    - `customerID`, `gender`, `SeniorCitizen`, `Partner`, `Dependents`, `tenure`, `PhoneService`, `MultipleLines`, `InternetService`, `Contract`, `PaymentMethod`, `MonthlyCharges`, `TotalCharges`, and `Churn`.
  - **Churn Definition:** The target variable `Churn` identifies customers who have left the service. Approximately **26.5%** of the total customer base churned, representing a significant retention issue for the company.
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## 2. Exploratory Data Analysis (EDA):

Initial steps involved checking the data structure and identifying any missing or null values.

- **Customer Demographics:**
    - **Gender:** Males and females churned at nearly the same rate (~26%), indicating gender may not be a significant factor in churn.
    - **Senior Citizens:** Churn among senior citizens (65+) was notably higher, around **42%**, compared to younger customers (~23%). This suggests that elderly customers may face specific issues (e.g., higher costs, less service need).
  - **Tenure:**
    - Customers with a tenure of less than 1 year were the most likely to churn. In this group, **43%** of customers left the service. In contrast, customers with a tenure of over 5 years showed much lower churn rates (~11%). This suggests that customers who stay longer are more likely to remain loyal.
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## 3. Service Usage and Churn:

A significant part of the analysis focuses on how service offerings impact churn:

- **Phone and Internet Service:**
  - **Phone Service:** Customers without phone service showed a higher churn rate (~25%) compared to those with phone service (~19%). This suggests that offering bundled services could reduce churn.
  - **Internet Service:** Customers with DSL or Fiber internet services exhibited different churn behaviours:
    - **DSL** customers churned at a rate of **25%**.

- **Fiber Optic** customers experienced a higher churn rate (~30%), likely due to pricing or service quality issues.
  - **Additional Services:**
    - **Online Security:** Customers with online security services churned at only **15%**, compared to **35%** churn among those without this service.
    - **Streaming Services:** Customers subscribed to both streaming TV and movie services had churn rates of around **30%**, indicating that these services might not significantly impact customer retention.
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#### 4. Contract Type & Churn:

One of the most significant findings in this analysis relates to the type of customer contract:

- **Monthly Contracts:** Customers with month-to-month contracts had a churn rate of **43%**, the highest of any contract type. This highlights the instability of short-term customers.
  - **One-Year and Two-Year Contracts:** Churn rates drop significantly with longer contracts, down to around **11%** for two-year contracts, indicating that encouraging customers to sign long-term contracts is an effective retention strategy.
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#### 5. Payment Methods:

- **Electronic Check:** This payment method had the highest churn rate, at **42%**, compared to other methods such as bank transfer and credit cards, both under **20%**. This suggests that customers using electronic check might face more friction in the payment process, which could contribute to higher churn.
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#### 6. Customer Charges:

- **Monthly Charges:** Customers with higher monthly charges showed a higher likelihood of churn. Specifically, those paying over \$80 per month had a churn rate of **40%**, while those paying less than \$30 per month had a churn rate of just **15%**.
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#### 7. Key Insights and Recommendations:

- **Reduce Churn in High-Risk Groups:** Focus retention efforts on high-risk groups such as senior citizens and customers with month-to-month contracts.
- **Promote Bundled Services:** Encourage customers to subscribe to both phone and internet services to reduce churn, as customers with bundled services tend to stay longer.

- **Introduce Loyalty Programs:** Offering incentives for longer contracts (1-2 years) can reduce churn and improve customer lifetime value.
  - **Payment Method Optimization:** Streamline the payment process for customers using electronic checks or encourage them to switch to more stable methods like automatic bank transfers or credit cards.
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This analysis identifies key drivers of churn and suggests data-driven strategies for improving customer retention. The company should prioritise addressing issues faced by short-tenure customers and those with higher monthly charges while optimising service offerings to meet customer needs better.