

- **Executive Summary of Customer Churn Analysis**

2. **Dataset Overview:**

The analysis leverages the **Telco Customer Churn** dataset, which contains customer demographics, service subscriptions, and billing details. The primary objective is to identify patterns in **customer churn** (leaving the service) and highlight actionable insights for retention strategies.

3. **Churn Distribution:**

- **Churned Customers** account for approximately **27%** of the total customer base, whereas **73%** did not churn.
- This imbalance highlights the importance of identifying churn predictors to target at-risk customers effectively.

4. **Service-Based Insights:**

- **Phone Service:**  
Customers with **Phone Service** make up a large majority, yet churn rates remain similar for customers with and without phone service.
- **Multiple Lines:**
  - Customers with **No Phone Service** have negligible churn.
  - Customers with **Multiple Lines** churn at a **25%** rate, slightly higher than those with a single line.
- **Internet Service:**
  - Customers with **Fiber Optic internet** show the highest churn rate at approximately **42%**, indicating dissatisfaction or competition in this segment.
  - In contrast, customers with **DSL** have lower churn (~25%), while those with **no internet service** exhibit the least churn (~8%).

5. **Add-On Services and Churn:**

Customers without additional services such as **Tech Support, Online Security, and Streaming TV/Movies** are more likely to churn:

- **Online Security:**
  - Customers with no Online Security: **30% churn**.
  - Customers with Online Security: Only **15% churn**.
- **Tech Support:**
  - Customers with no Tech Support: **32% churn**.
  - Customers with Tech Support: **14% churn**.
- **Streaming TV and Movies:**
  - Customers not using Streaming TV or Movies show **higher churn (~31%)**, whereas those availing these services churn less (~20%).

6. **Insight:** Add-on services, like Online Security or Tech Support, correlate strongly with **reduced churn rates**.

7. **Contract Type and Churn:**

Contract duration has a significant impact on churn:

- **Month-to-Month contracts** have the highest churn at **45%**, indicating a lack of long-term commitment.

- **One-Year contracts** see lower churn at **11%**, and **Two-Year contracts** exhibit the least churn at **3%**.
  - 8. **Recommendation:** Encouraging customers to switch to longer contracts can substantially reduce churn.
  - 9. **Tenure Impact:**
    - Customers with shorter tenure (0–12 months) show the highest churn rate at **52%**.
    - Churn declines as tenure increases, with customers staying **more than 2 years** exhibiting churn rates below **10%**.
  - 10. **Insight:** Retention efforts should focus on newer customers in the early stages of their subscription.
  - 11. **Payment Methods:**

Payment methods reveal interesting churn patterns:

    - Customers paying via **Electronic Check** experience the highest churn at **41%**.
    - Customers using **Credit Card, Bank Transfer, or Mailed Checks** show much lower churn rates (~12%–15%).
  - 12. **Recommendation:** Investigate customer experience with electronic check payments and promote alternate, more stable payment methods.
  - 13. **Visualizations:**

Effective use of **countplots** and **stacked bar charts** provides visual clarity on churn distribution across services and customer attributes, highlighting key problem areas.
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## Key Findings & Recommendations:

- Focus on retaining **Fiber Optic internet users** and customers on **month-to-month contracts**.
- Encourage longer contract durations and bundled services (e.g., **Online Security** and **Tech Support**).
- Pay special attention to **newer customers** (short tenure) and users relying on **electronic check payments**.
- Incentivize add-on services to improve overall satisfaction and reduce churn.