Executive Summary: Telco Customer Churn Analysis

This analysis investigates customer churn dynamics within a tech services environment, using data exploration and visualization to identify critical factors influencing churn and to guide strategic retention actions.

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1. Churn Rate Overview

- Out of the total customer base, **26.5%** have churned while **73.5%** remain active.
- This equates to roughly **1 in every 4 customers** leaving, highlighting a moderate churn problem.
- A pie chart and count plot clearly depict this imbalance, emphasizing the need for targeted interventions.

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2. Key Factors Driving Churn

a. Contract Type

- **Month-to-month contracts** show the highest churn rate at **42%**, compared to:
  - **One-year contracts**: ~11%
  - **Two-year contracts**: ~3%
- Customers on longer contracts churn less, suggesting stronger loyalty or binding terms.

b. Internet Service Type

- **Fiber optic internet users** have a churn rate of approximately **42%**.
- In contrast, **DSL users** churn at **19%**, and customers with **no internet service** churn at only **7%**.

- The high churn among fiber optic users may be tied to higher costs or service dissatisfaction.

c. Tech Support Availability

- Customers **without tech support** churn at a rate of **37%**, while those **with tech support** show a much lower churn rate of **15%**.
- This suggests that access to help during technical issues strongly influences retention.

d. Payment Method

- **Electronic check users** show the highest churn at **34%**.
- Customers using **automatic bank payments** churn at a lower rate of **14%**, indicating possible links to convenience or financial commitment.

e. Tenure

- **New customers (tenure < 12 months)** have a **churn rate of over 50%**, while those **with tenure > 50 months** have a churn rate of **<5%**.
- Loyalty builds over time, stressing the importance of engaging new users early.

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3. Numerical Feature Insights

a. Monthly Charges

- Average monthly charges for churned customers: **$74.44**
- For retained customers: **$61.27**
- This suggests high-cost plans are a churn driver, especially if not paired with perceived value.

b. Total Charges

- Churned customers tend to have lower total charges, implying they are relatively new and possibly dissatisfied early in their customer journey.

c. Tenure (Customer Lifetime)

- A sharp upward trend in retention is observed with increasing tenure. Customers with **>40 months** of tenure churn far less frequently.

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4. Correlation Matrix & Heatmap Insights

- **Tenure** has a **strong negative correlation (-0.35)** with churn.
- **Monthly Charges** has a **moderate positive correlation (~0.19)** with churn.
- Other variables like **tech support**, **contract type**, and **internet service** have strong associations based on categorical relationships.

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5. Demographic Segment Observations

- **Senior citizens** have a higher churn rate (**42%**) compared to non-senior citizens (**24%**).
- **Single customers** (no partner): churn rate of **32%** vs **17%** for those with partners.
- Customers with **no dependents** churn at **31%**, compared to **14%** for those with dependents.
- This suggests emotional or family ties may contribute to stability in subscriptions.

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6. Actionable Recommendations

1. **Target high-risk groups**:

    - Offer tailored incentives to fiber optic and monthly-contract users.
    - Consider migration offers to annual contracts to reduce churn.

2. **Improve onboarding for new customers**:
    - Reduce early churn through improved service support, welcome offers, and follow-up engagement in the first 6–12 months.
3. **Enhance tech support visibility**:
    - Upsell or bundle tech support with other services, highlighting its value.
4. **Incentivize stable payment methods**:
    - Promote automatic payment options with small discounts or rewards to improve retention.
5. **Develop loyalty programs**:
    - Offer tenure-based rewards, especially between months 6 and 24, where churn is highest.