Executive Summary: Telecom Customer Churn Analysis

This project utilized exploratory data analysis (EDA) techniques to investigate behavioral patterns and critical factors affecting customer churn for a telecom company. Through visualizations and quantitative breakdowns, crucial actionable insights were revealed. Customer-Churn-Analysis.ipynb

Overall Churn Distribution

The dataset shows that approximately **26.5%** of customers have churned while **73.5%** remain with the company, as illustrated by the pie chart. This substantial churn rate highlights a significant opportunity for retention strategies. Customer-Churn-Analysis.ipynb

Churn by Gender

- Both genders exhibit nearly identical churn rates.

    - **Females:** About **27.0%** churn and **73.0%** retention.

    - **Males:** About **26.1%** churn and **73.9%** retention.

- This suggests that churn is independent of gender, and retention programs should be universal across demographic groups. Customer-Churn-Analysis.ipynb

Churn by Contract Type

- Churn rates vary dramatically with contract type:

    - **Month-to-Month:** Highest churn at **43.9%**.

    - **One-Year:** Only **11.5%** churn.

    - **Two-Year:** Least churn at **2.8%**.

- Customers on month-to-month contracts are most at risk; long-term contracts (one and two years) are highly effective in retention. Customer-Churn-Analysis.ipynb

Churn by Payment Method

- **Electronic Check:** Most vulnerable group, with **45.0%** churn.

- Other payment methods (Credit Card, Bank Transfer, Mailed Check) have significantly lower churn rates, generally under **20%**.

- Encouraging stable payment methods and reducing reliance on electronic checks can improve retention. Customer-Churn-Analysis.ipynb

Tenure Insights

- Most churn occurs within customers' first 10 months.

- Customers with tenures of less than a year have a vastly higher churn percentage compared to long-tenure customers.

- Retention efforts should prioritize onboarding and early engagement to reduce churn in the first year. Customer-Churn-Analysis.ipynb

Segment-Specific Observations

- **Senior Citizens:** Show slightly higher churn compared to younger segments (~29.0% vs. ~26.0%), suggesting targeted programs for seniors may be beneficial.

- **Service Usage & Charges:** Churn tends to be concentrated among customers with lower average monthly charges and fewer service subscriptions.

Data Quality and Visualization

Your analysis features:

- **Robust handling of missing values and no duplicates**, ensuring accurate statistical inference.

- **Stacked bar charts** with percentage labels, pie charts, and histograms that clearly communicate distribution and segment risks.

- Well-commented code and direct annotations for insights and callouts in each visualization. Customer-Churn-Analysis.ipynb

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Key Recommendations

- **Prioritize retention** for month-to-month contract customers and those using electronic checks.

- **Invest in onboarding strategies** and loyalty plans, especially for new customers and senior citizens.

- **Consider universal retention tactics** as gender-based differences are negligible.

- Maintain ongoing data quality checks for accurate business intelligence.

Your EDA showcases mastery in data visualization and uncovering actionable business insights. This summary positions the project as a strong showcase for analytics roles, highlighting your

ability to deliver executive-level findings and recommendations with clear, percentage-based evidence