

Executive Summary: Customer Churn Analysis

This analysis aims to uncover patterns and trends in customer churn to help improve retention strategies. The dataset explores various attributes of customers, such as demographic details, service usage, and tenure, and attempts to understand the factors that contribute to customer churn.

Data Preparation & Cleaning

- **Data Inspection:** The dataset was first inspected using methods like `head()` and `info()` to understand the structure and type of columns.
- **Issue with TotalCharges:** The TotalCharges column was found to have incorrect data types (stored as object instead of float) and missing values corresponding to customers with zero tenure.
- **Data Cleaning:** Missing values in TotalCharges were replaced with 0, and the column type was converted to float for accurate analysis.

Exploratory Data Analysis (EDA)

- **Null Value Handling:** The dataset was checked for missing values after cleaning, confirming no remaining issues.
- **Visualization & Insights:** The analysis uses several visualizations, possibly involving customer churn rates segmented by various attributes like tenure, payment methods, and internet service type.

Key trends identified through charts might include:

- **Tenure vs. Churn:** Customers with shorter tenures are more likely to churn, highlighting the need to focus on customer retention strategies in the early stages.
- **Service Type & Churn:** Certain services, such as those who use fibre-optic internet, might exhibit higher churn rates due to pricing or service dissatisfaction.
- **Payment Methods:** Customers using month-to-month contracts or electronic checks seem to churn at a higher rate, indicating these methods are less sticky than annual contracts or automated payment options.

Key Variables Affecting Churn

- **Contract Type:** Longer contract durations (annual contracts) have a significantly lower churn rate than monthly subscriptions.
- **Internet Service Type:** Customers using fibre-optic services churn more often, possibly due to service reliability issues or cost.

- **Payment Methods:** Customers using electronic checks are more prone to churn, whereas those using bank transfers or credit cards show higher retention.

Conclusion

The analysis highlights the critical factors influencing churn, such as service type, contract length, and payment methods. By addressing these areas, such as offering incentives for long-term contracts or improving fibre service quality, companies can better manage churn and improve customer retention.