**Customer Churn Analysis**

**Statistical Hypothesis and Exploratory Data Analysis**

Data Exploration and Analysis

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In my analysis, I hypothesized that customer tenure and contract type would significantly impact churn rates, with monthly and total charges also playing a crucial role. The exploratory data analysis (EDA) supported my hypothesis, revealing several important insights.

Firstly, I found that short-tenured customers and those on month-to-month contracts were more likely to churn, which aligns with my expectations. This suggests that customers who have been with the company for a shorter period or are not committed to long-term contracts are more prone to leaving. Secondly, my analysis showed that higher monthly charges were associated with an increased likelihood of churn. This indicates that customers facing higher bills might be more inclined to discontinue their service, possibly due to cost concerns. Conversely, longer contracts appeared to mitigate churn, reinforcing the idea that commitment plays a vital role in customer retention. Lastly, total charges were positively correlated with tenure and contract type, implying that customers who stay longer and commit to more extended contracts tend to contribute more revenue over time, highlighting their long-term value to the company.

There are potential improvements that could enhance the robustness of this analysis. Incorporating additional variables, such as specific services like InternetService or PhoneService, might provide deeper insights into the factors driving customer churn. Furthermore, assuming a normal distribution for total charges may have overlooked certain heavy-tailed patterns in the data, which could affect the accuracy of our conclusions. Understanding non-linear relationships between variables also posed a challenge, suggesting that more sophisticated statistical techniques might be necessary for a more comprehensive analysis.