Subject: Approaching the Hypothesis Testing on Price Sensitivity and Churn

Dear Associate Director,

I hope this email finds you well. I've carefully reviewed the hypothesis related to customer churn driven by price sensitivities and would like to share my approach to how we can test this hypothesis effectively. This problem presents a great opportunity for us to dive into data analysis and provide valuable insights to address the client's concerns.

1. Data Collection and Preparation:
To begin, we need historical data on customer behavior, including customer profiles, usage patterns, billing history, and churn status. The data should span several months to capture potential seasonality. Having access to both structured and unstructured data (customer feedback, interactions) could offer a comprehensive perspective.

2. Exploratory Data Analysis (EDA):
A thorough EDA is crucial to understanding the characteristics of the data and relationships between variables. We will analyze data distributions, correlations, and trends to identify initial insights. Visualizations and summary statistics will help us uncover patterns.

3. Feature Engineering:
Creating relevant features is vital for model performance. We'll engineer features that capture price sensitivity indicators, historical billing fluctuations, tenure, customer interactions, and any other information that might influence churn.

4. Model Selection and Development:
Given the predictive nature of the problem, we'll explore machine learning models that can predict churn. Models like logistic regression, decision trees, or ensemble methods are potential candidates. Time series models, such as ARIMA or LSTM, could be valuable considering the temporal nature of customer interactions.

5. Model Evaluation:
We will evaluate the chosen model's performance using metrics like accuracy, precision, recall, and F1-score. Cross-validation will help ensure the model's generalization capability and avoid overfitting.

6. Insights and Recommendations:

Interpreting the model's results is key to answering our hypothesis. We'll analyze which factors, including price sensitivity indicators, have the most influence on churn. This insight will guide us in providing actionable recommendations to the client.

7. Proposed Testing of the Discount Incentive:
For customers identified as high-risk churn candidates, we propose an A/B testing approach. Randomly selecting a subset to receive the 20% discount will allow us to analyze the discount's impact on customer retention. A careful design will ensure accurate assessment.

8. Communication and Reporting:
We will provide a comprehensive report summarizing the entire process, from data collection to model evaluation. Clear visualizations and concise explanations will help communicate findings to stakeholders.

Data Requirements:
To proceed, we'll need access to historical customer data, including customer profiles, usage patterns, billing information, churn status, and any customer feedback. The more comprehensive the dataset, the more accurate our insights will be.

Expected Outcomes:
Upon completing the analysis, we expect to have a predictive model that can effectively identify customers at risk of churn, driven by price sensitivities. Additionally, we will provide insights into which factors contribute significantly to churn and the potential impact of offering a 20% discount.

I'm excited about the potential insights we can provide through this analysis. Please let me know your thoughts on this approach, and if you have any additional guidance or data available.

Looking forward to your feedback.

Best regards,
Santosh