Factors Affecting Churn Risk

I analyzed the telecom customer dataset using the LogNormal Accelerated Failure Time (AFT) model to understand what influences customer churn. The results show that customers who have been with the company longer are less likely to leave, meaning tenure is a strong factor in retention. Customers who have lived at the same address for many years tend to stay a bit longer as well, suggesting stability plays a role. Age also matters: older customers generally have longer expected tenure, showing that they are more loyal than younger customers.

Among the three AFT models tested (Weibull, LogNormal, and LogLogistic), the LogNormal model had the lowest AIC score (2950.30), indicating it fits the data best. However, the concordance index is only 0.21, which means the model's ability to predict churn precisely is limited with the current features. It is important to note that this model includes only numerical features like tenure, age, and address, and does not yet consider categorical variables such as internet or voice service, or customer category, which likely also affect churn.

Customer Lifetime Value (CLV) and 12-Month Churn

Using the model, I estimated each customer's lifetime value (CLV) and their probability of leaving within the first 12 months. On average, customers have a CLV of about $1,335, with values ranging from $902 to $1,555. The probability of churn within 12 months varies by customer category, roughly between 9% and 12%.

Looking at the customer segments, Plus service and E-service customers stand out as the most valuable. Plus service customers have the highest average CLV at $1,365 and the lowest 12-month churn probability at 9.2%. E-service customers also show high value, with an average CLV of $1,346 and a churn probability of 10.2%. In contrast, Basic service customers have a lower CLV and higher churn risk. Overall, there were 250 high-value customers and 250 high-risk customers, but none of the high-value customers were also high-risk, meaning that the most valuable customers tend to be relatively stable.

Retention Budget and Recommendations

Assuming this dataset represents the entire customer population, the potential annual revenue loss from customers at risk is about $41,120. To protect this revenue, I recommend an annual retention budget of roughly $6,168, which is 15% of the potential loss.

Retention efforts should focus on a few key areas. First, new customers with less than 24 months of tenure are the most likely to leave, so onboarding programs and early engagement initiatives could help reduce churn. Second, customers in the Basic service category show the highest churn, so offering incentives to upgrade to Plus or E-service packages could improve loyalty and increase their CLV. Maintaining engagement with the high-value Plus and E-service

customers is also important to ensure stable revenue. Finally, while older customers and those with long address duration are more loyal, programs tailored to younger or less stable customers could further reduce churn.

Summary

The LogNormal AFT model was the best fit based on AIC and revealed that tenure, age, and address stability are the main drivers of retention. Plus and E-service customers are the most valuable segments. The average CLV across all customers is $1,335, and the suggested retention budget is $6,168 to focus on high-value and at-risk areas. Although the model's predictive power is limited, these findings provide useful guidance for prioritizing retention strategies and maximizing customer lifetime value.