Domain Oriented Case Study- Option I
# Telecom Churn Case Study

Group Member

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Problem Statement

- Leading Telecom firm is facing a high churn rate, identify the indicators for the churn rate while 80% of the revenue is from the high-value customer.

- Need to Identify the high-value customer on basis of the recharge amount and the service used

- Predict the churn for the high-value customers with help of the churn phases
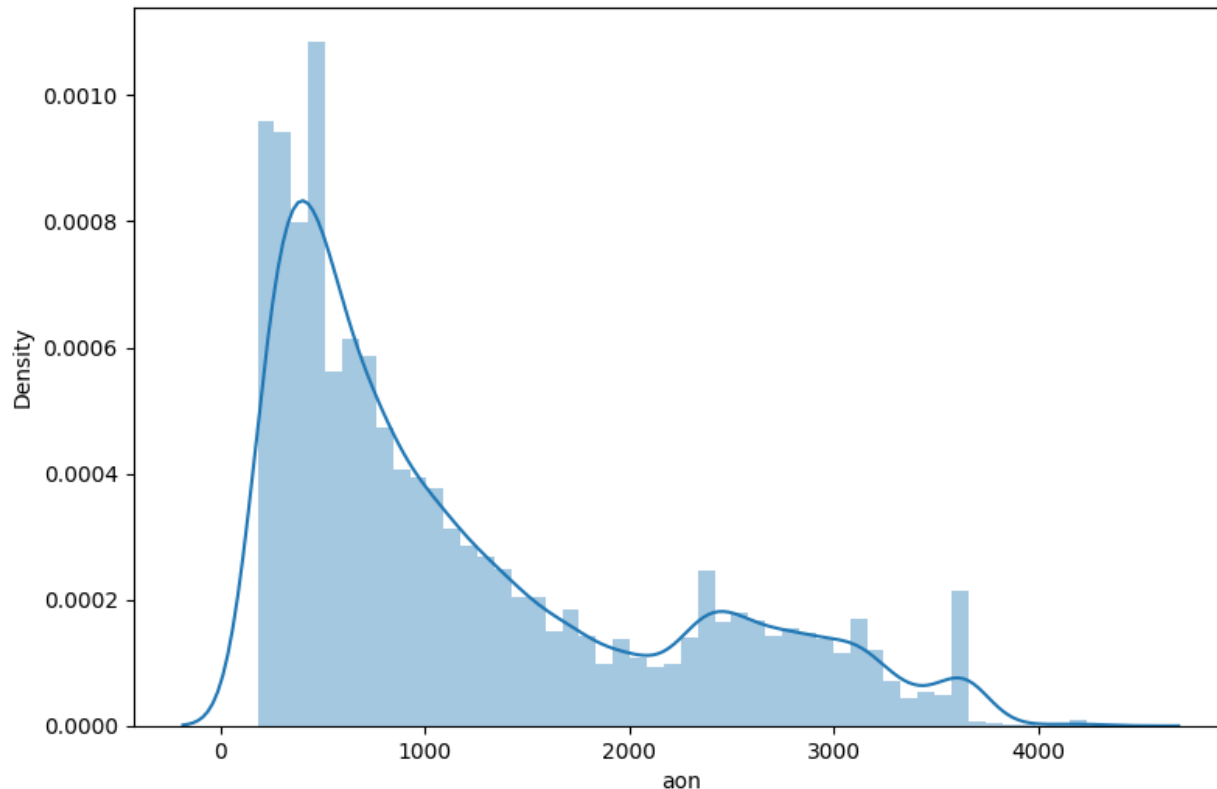
Customer Churn Distribution
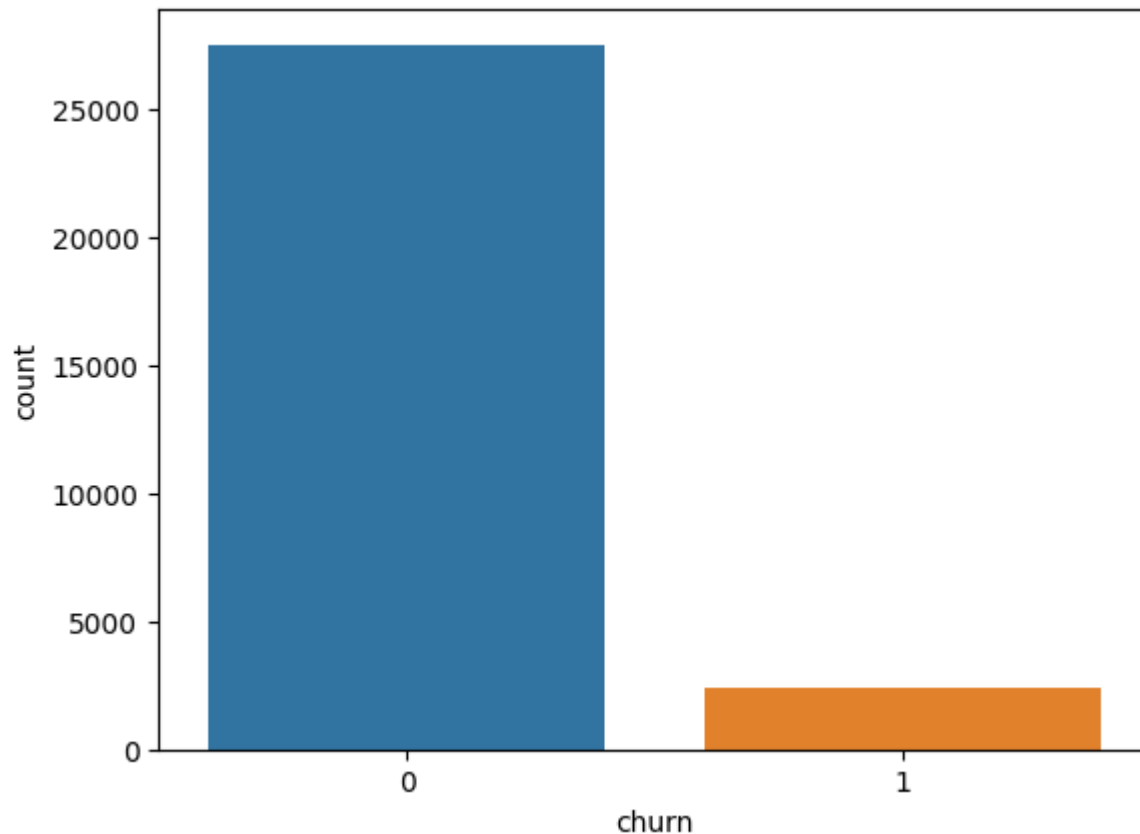
The bar chart shows the distribution of churn status in a dataset. The x-axis represents the churn status (0 for no churn, 1 for churn), and the y-axis represents the count of occurrences for each status.

From the chart, we can observe the following:

1. The majority of the data points (customers) have a churn status of 0, meaning they did not churn. This count is significantly higher, around 25,000.

2. A much smaller portion of the data points have a churn status of 1, indicating they did churn. This count is much lower, around 2,500.

# Distribution of "aon" with Churn Overlay

Key Observations:

1. Density Distribution (Left Chart):

1. The density is higher for customers with lower "aon," indicating many customers have been with the network for a shorter period.

2. As the "aon" increases, the density decreases, showing fewer customers have been with the network for a longer time.

2. Count Distribution with Churn Status (Right Chart):

1. For customers with lower "aon," there are more churners (orange) compared to customers with higher "aon."

2. The proportion of churners decreases as the "aon" increases, suggesting that customers who have been with the network longer are less likely to churn.

Churn Rate Based on Decrease in Number of Recharges
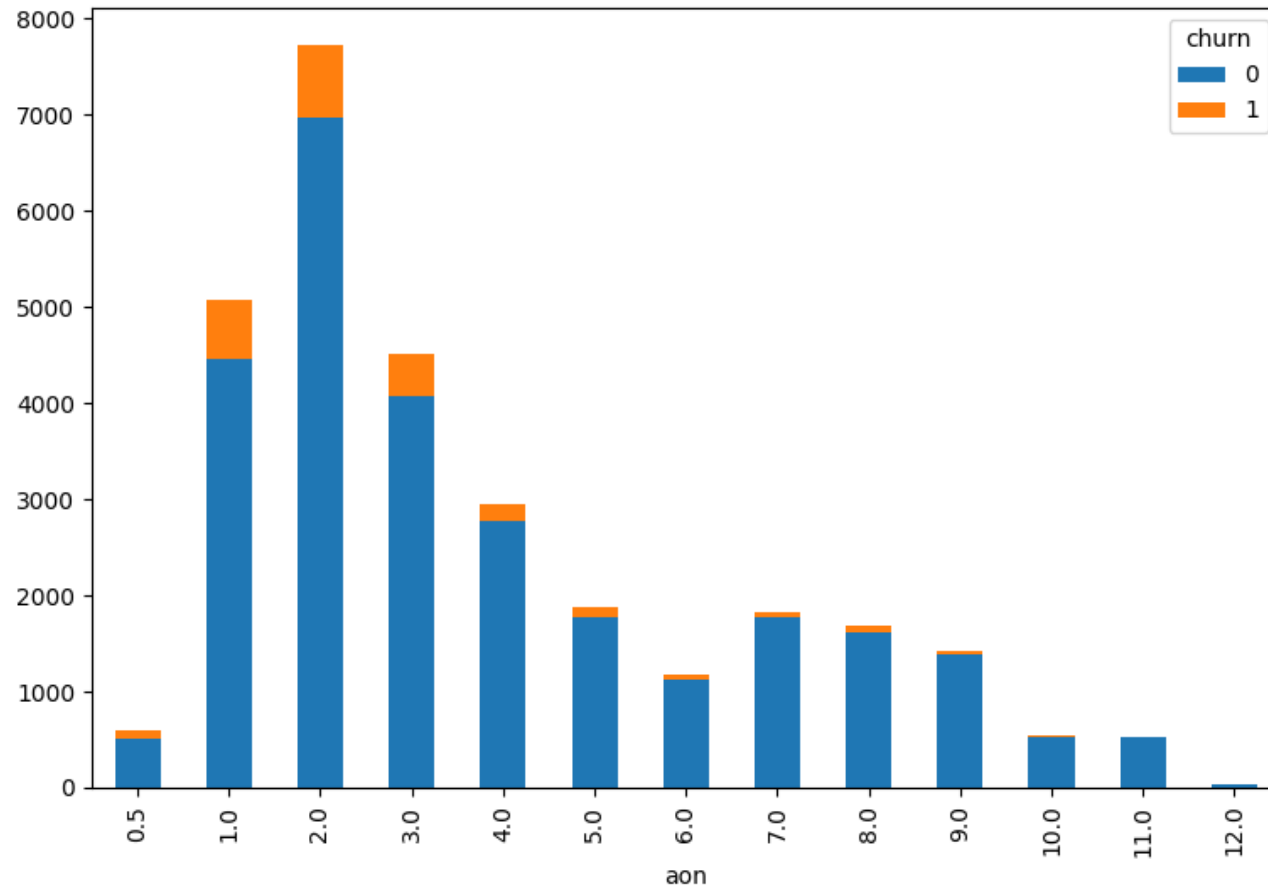
X-Axis (decrease_rech_num_action): Indicates whether the customer decreased their number of recharges during the action month. "0" represents no decrease, while "1" represents a decrease. **Y-Axis (Count):** Shows the count of customers with their respective churn status.

Key Observations:

1. Churn Rate for Decrease in Recharges (1):

1. The churn rate is significantly higher for customers who decreased their number of recharges. This indicates that customers who reduce their recharge frequency are likelier to stop using the service.

**2. Churn Rate for No Decrease in Recharges (0):**

1. The churn rate is lower for customers who did not decrease their number of recharges, suggesting that consistent recharge behavior correlates with customer retention.

Analysis of Tenure Distribution
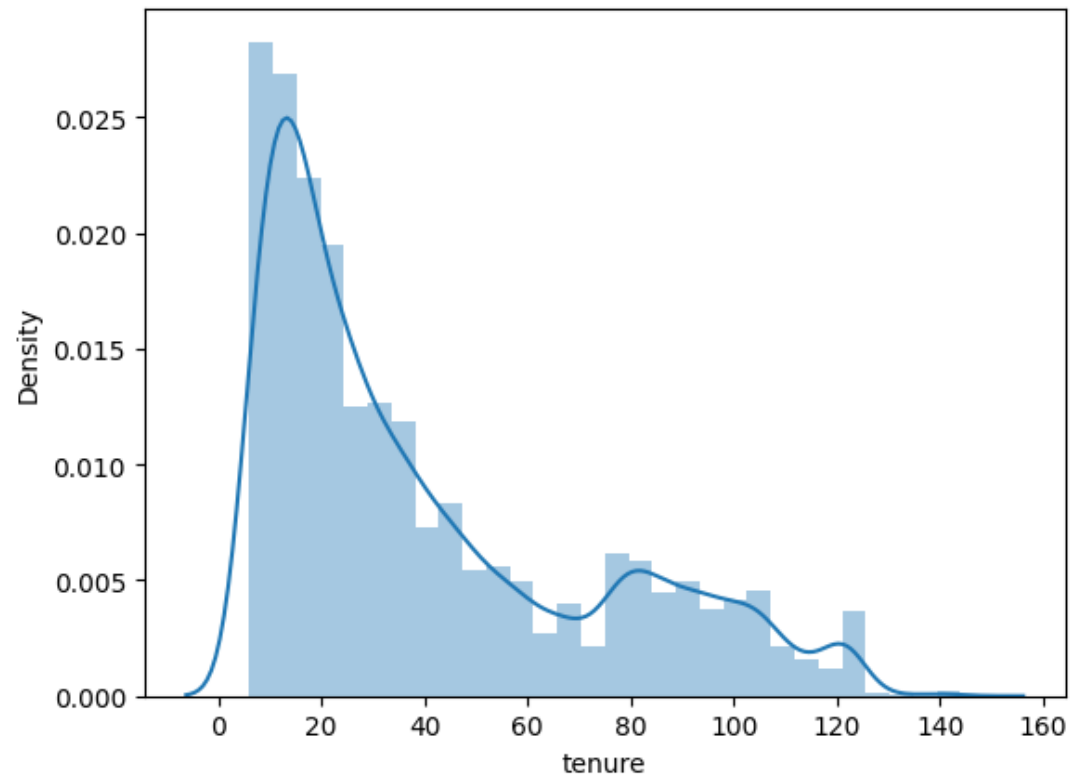
This analysis indicates that most tenures are short, with a significant drop-off as tenure increases, though there are a few instances of very long tenures.

Analysis of Churn by Tenure Range
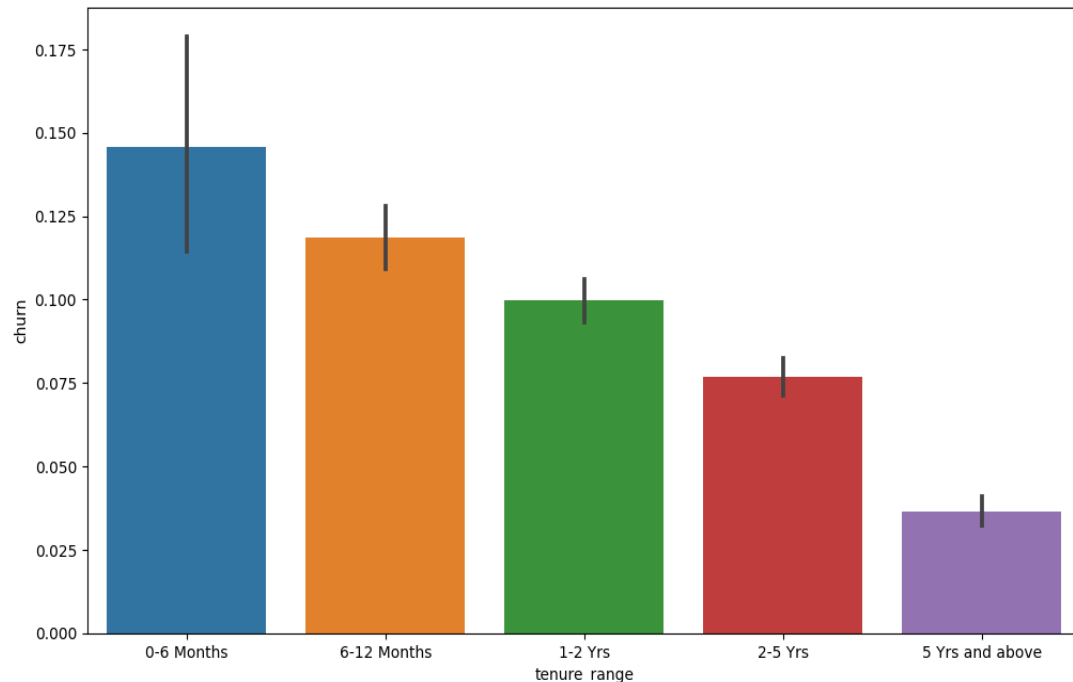
1. Churn Rates Across Tenure Ranges

- The highest churn rate is observed in the 0-6 months tenure range, indicating that new customers or employees are more likely to leave within the first six months.

- There is a significant drop in churn rates for the 6-12 months range, though it remains relatively high.

- Churn continues to decrease for the 1-2 years and 2-5 years ranges, showing an improving trend as tenure increases.

- The lowest churn rate is seen in the 5 years and above category, suggesting that long-term customers or employees are the least likely to leave.

2. Trend Observations

- The overall trend indicates a negative correlation between tenure and churn rate. As tenure increases, the likelihood of churn decreases.

- The reduction in churn rates as tenure increases highlights the importance of strategies aimed at retaining customers or employees in the early stages.

3. Error Bars

- The error bars in the chart provide a measure of uncertainty or variability in the churn rates for each tenure range. Notably, the 0-6 months range shows the highest variability, which might suggest a diverse range of experiences or factors influencing churn during this period.

This analysis underscores the need for targeted retention efforts, particularly in the first year, to reduce churn and enhance long-term loyalty.

Analysis of Recharge Amounts and Churn
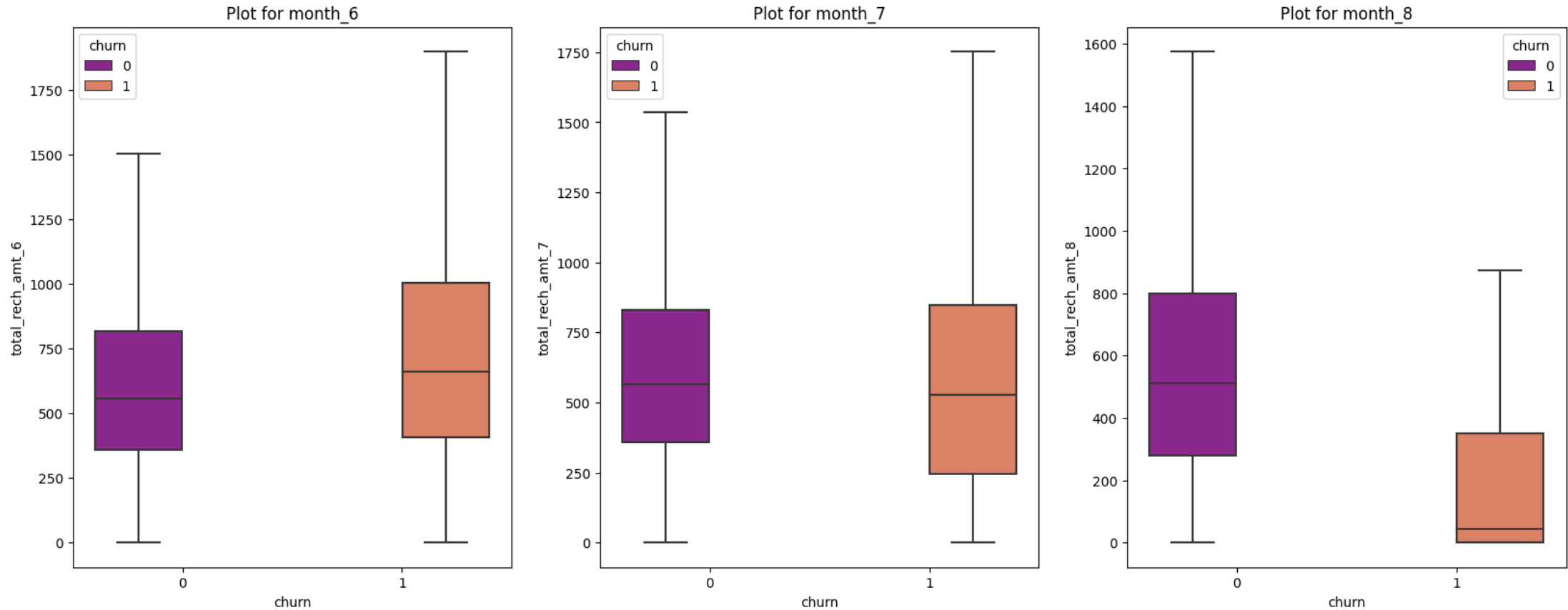
For months 6 and 7, churned users tend to have higher median recharge amounts compared to non-churned users.
However, by month 8, the recharge amounts for churned users drop significantly.
The drop in recharge amounts in month 8 for churned users could be an indicator of impending churn. Identifying such patterns early could help in implementing retention strategies.

Analysis of Maximum Recharge Amount by Churn Status
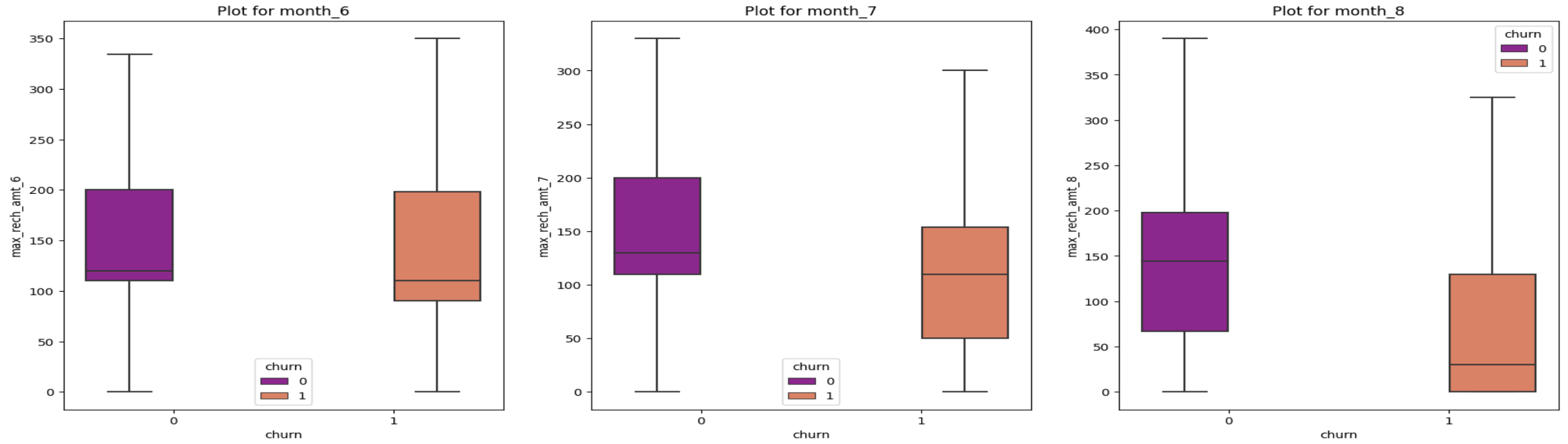
Observations:

- For non-churn customers, the recharge amount remains relatively consistent across the three months, with a median around 150 and similar IQRs.
- For churn customers, the median recharge amount decreases significantly by month 8.
- The IQR also narrows in month 8, indicating a decrease in recharge variability among churn customers.:
- In month 8, there is a notable difference between the recharge amounts of churn and non-churn customers, with non-churn customers showing higher recharge amounts.

# Comparison of Total Recharge Numbers by Churn Status Across Three Months
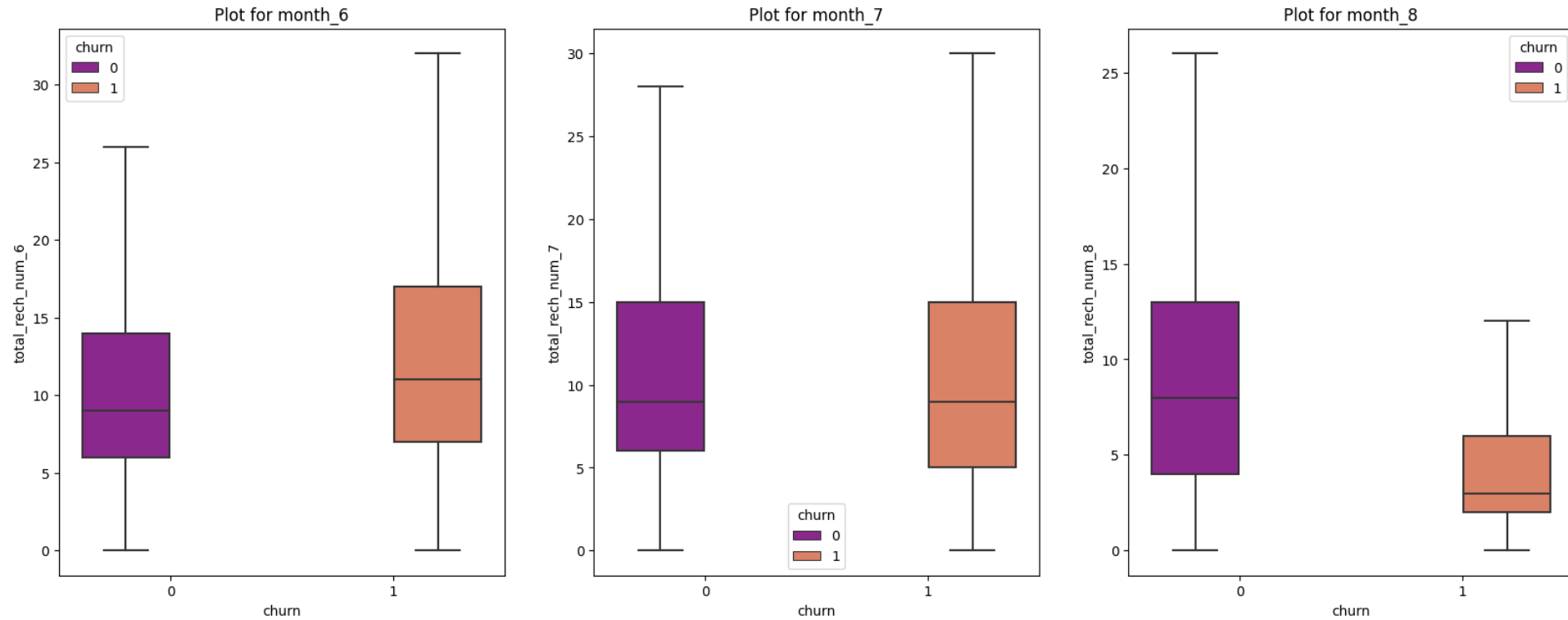
Observations:
In months 6 and 7, the distributions of total recharge numbers are quite similar between churned and non-churned customers, though churned customers tend to have a slightly higher range.By month 8, there's a noticeable decrease in the number of recharges for customers who churned, as seen by the lower median and compressed IQR compared to non-churned customers.This trend suggests that customers who eventually churn show a significant drop in their recharge activities in the final month before churning. The consistent recharge numbers in the earlier months (6 and 7) indicate that a sudden decline in recharge numbers could be a strong indicator of impending churn.
Comparison of Total Recharge Numbers by Churn Status Across Three Months

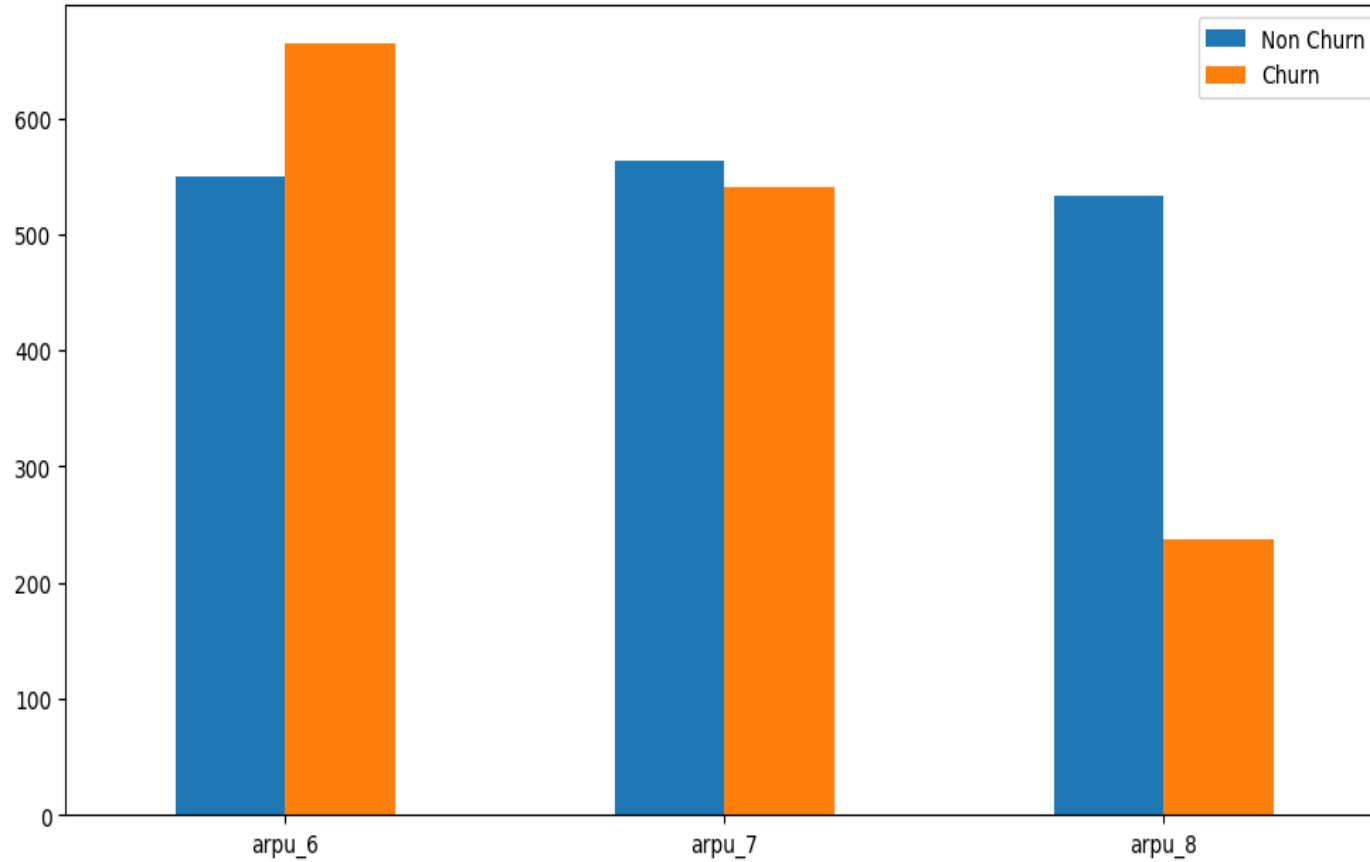# Comparison of Last Day's Recharge Amounts by Churn Status Across Three Months
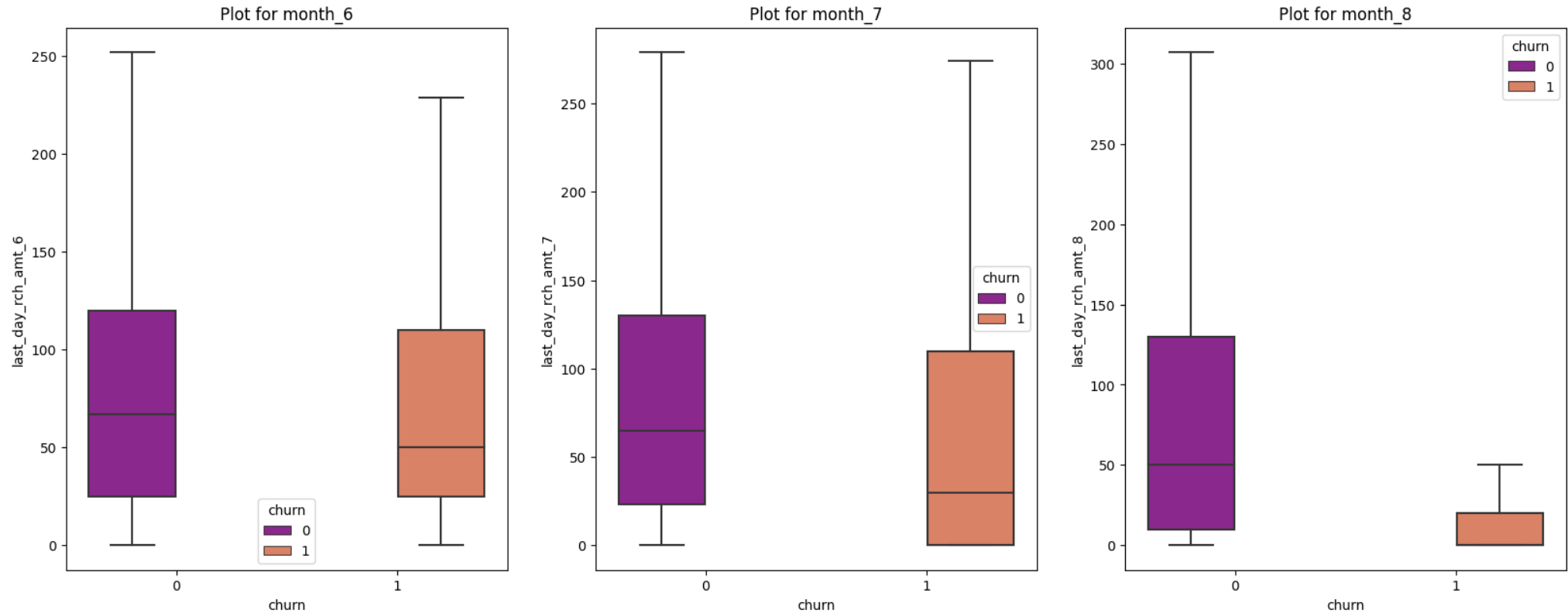
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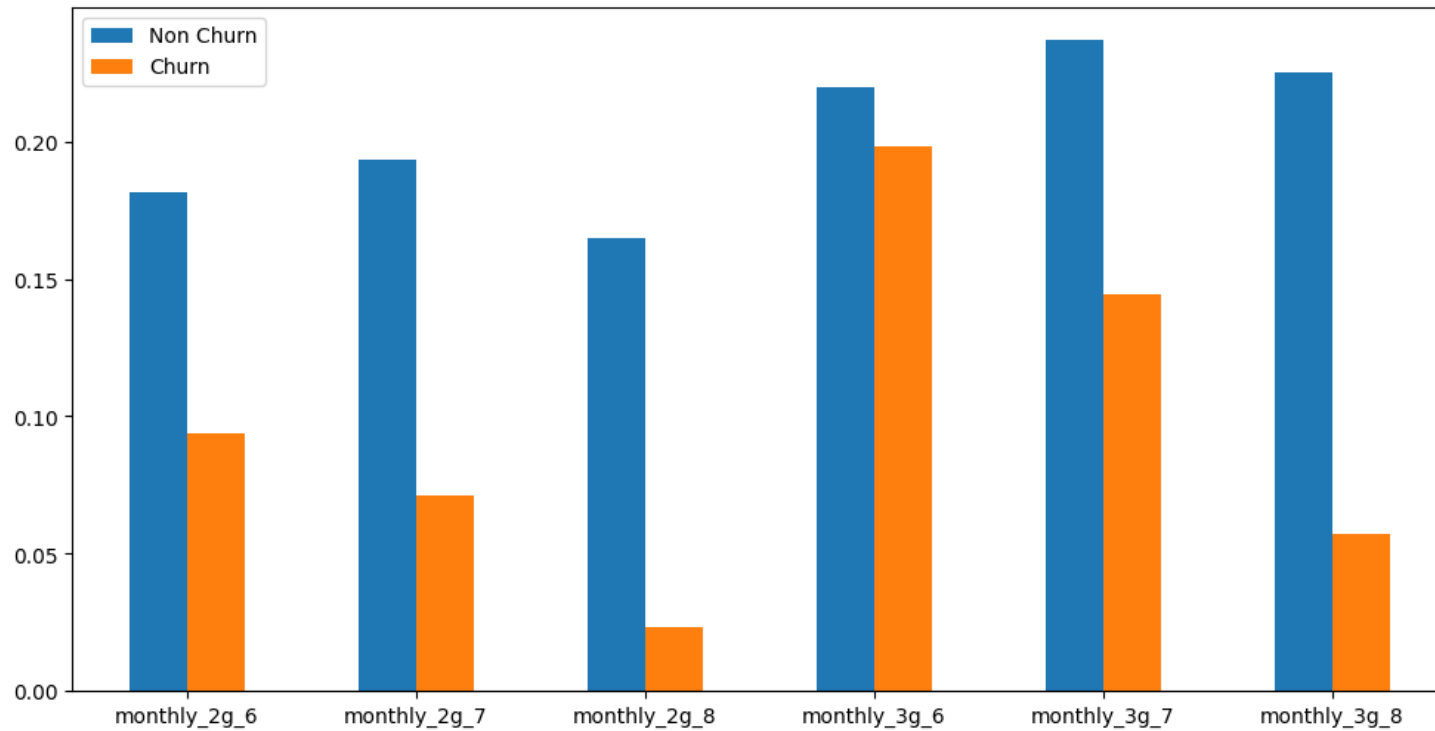
Across all metrics, non-churn customers consistently show higher monthly usage for both 2G and 3G services compared to churn customers.The difference in usage is more pronounced in the 2G data, where non-churn customers' usage is significantly higher than churn customers'.The trend suggests that higher engagement in 2G and 3G services correlates with lower churn rates, indicating that customers who use these services more are less likely to leave.

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Correlation Heatmap of Various Usage Metrics for Month 6

- Overall Outgoing Minutes (total_og_mou_6):Strongly correlated with std_og_t2t_mou_6 (0.61) and std_og_t2m_mou_6 (0.64), indicating that standard outgoing calls contribute significantly to the total outgoing minutes.Moderately correlated with loc_og_t2t_mou_6 (0.37) and loc_og_t2m_mou_6 (0.37), suggesting local outgoing calls also play an important role in the total.

- Local Outgoing Calls (loc_og_mou_6):Strong correlation with loc_og_t2t_mou_6 (0.75) and loc_og_t2m_mou_6 (0.8), showing that local T2T (same operator) and T2M (different operator) calls form a large part of local outgoing calls.

- Standard Outgoing Calls (std_og_t2t_mou_6 and std_og_t2m_mou_6):High correlation with each other (0.75) and with total outgoing minutes, indicating that standard calls (T2T and T2M) are significant components of overall outgoing call activity.

- Special Outgoing Calls (spl_og_mou_6):Moderate correlation with loc_og_t2c_mou_6 (0.49) and low correlation with total outgoing minutes (0.16), suggesting that special outgoing calls are not a major contributor to total outgoing minutes but have some relation with local T2C (customer service) call

Business recommendation

To reduce customer churn, implement these strategies:

1. Engage Low Fixed-Line Call Customers: Prioritize retention efforts for customers with significantly fewer incoming calls from fixed lines.

2. Boost 8th Month Recharges: Target customers with fewer recharge activities in the 8th month with special promotions.

3. Address Increased Value-Based Costs: Offer retention incentives to customers whose costs have risen during the action phase.

4. Retain High 3G Recharge Customers: Engage customers with high monthly 3G recharges in August with personalized offers.

5. Monitor STD and 2G Usage Declines: Address decreasing STD incoming minutes and monthly 2G usage in August with tailored solutions.

6. Target Low Local and ISD Call Users: Provide special offers to customers with low incoming local and outgoing ISD calls.

7. Watch Value-Based Cost Spikes: Offer precautions to customers whose value-based costs have increased.

8. Improve Roaming Rates: Provide competitive roaming offers to retain customers using services from a roaming zone.

9. Act on Customer Feedback: Collect and address customer queries and complaints to improve services and reduce churn.