**TELECOM**

**REPORT: CHURN MANAGEMENT**

**1. CHURN OVERVIEW**

* **Total Churn:** 50K
* **Churn Rate:** 49.56%
* **Churn Due to Low Usage:** 46.79%
* **Churn Due to High Price:** 44.89%
* **Average Revenue Churn:** 58.21 million

The churn rate is relatively high, indicating a significant issue with customer retention. Understanding the causes of churn and identifying the groups most affected could help reduce the churn rate.

**2. CHURN BY AREA**

The distribution of churn by area shows that major urban areas and regions with a high concentration of customers tend to have the highest churn rates. Here’s the churn by area:

* **New York City Area:** 5.6K (11.2% of total churn)
* **Los Angeles Area:** 3.3K (6.6% of total churn)
* **Southwest Area:** 3.2K (6.4% of total churn)
* **California Area:** 3.1K (6.2% of total churn)
* **DC/Maryland/Virginia Area:** 3.0K (6.0% of total churn)
* Other areas with lower churn include **Chicago Area** (2.5K), **Tennessee Area** (1.3K), and **Philadelphia Area** (1.2K).

The areas with the highest churn, such as **New York City** and **Los Angeles**, should be prioritized for retention strategies to improve customer satisfaction and reduce churn.

**3. CHURN BY HND PRICE**

Based on the churn analysis by HND price, a clear relationship between **handset price (HND Price)** and churn rate emerges. Key insights include:

* **Low Price Range (< 100):** High churn rate (40-60%), with a large number of customers. This indicates that customers in the low-price range are more likely to leave, possibly due to lower satisfaction with the service or product.
* **Mid Price Range (100-300):** Churn rate drops (30-50%), and the number of customers decreases compared to the low-price range. This suggests that customers in this range are somewhat more loyal or satisfied.
* **High Price Range (> 300):** Lower churn rate (20-30%) and a very small customer base. This group represents higher-income customers who are less likely to churn if the service meets their needs.

**Conclusion:** To reduce churn, particularly in the low-price range, improving the service value and retention strategies for this segment could be key.

**4. REVENUE BY CHURN STATUS**

* **Total Revenue:**
  + **No Churn:** 371.72 million (48.6% of total revenue).
  + **Churn:** 393.11 million (51.4% of total revenue).
* **Average Revenue:**
  + **No Churn:** 2.99 million.
  + **Churn:** 2.89 million.

Although the churn group represents a slightly larger portion of total revenue, the average revenue per customer in the churned group is relatively similar to the non-churned group. This suggests that retaining high-value customers should be a priority to minimize the revenue loss.

**5. CHURN BY CUSTOMER TENURE**

The churn analysis by customer tenure reveals that the majority of churn happens among customers who have been using the service for a shorter time:

* **< 1 year:** 11K churned customers.
* **< 2 years:** 21K churned customers.
* **< 3 years:** 9K churned customers.
* **< 5 years:** 4K churned customers.
* **1 year:** 2K churned customers.
* **> 3, 4, 6 years:** Negligible churn.

This highlights that the highest churn occurs among customers with less than 2 years of tenure. Focusing on retention strategies for new customers could help significantly reduce churn.

**6. KEY INSIGHTS AND RECOMMENDATIONS**

1. **Enhance Service Quality:** Especially for customers in the low-price HND segment and new customers, focusing on improving service quality, offering incentives, and boosting satisfaction can help reduce churn.
2. **Customer Retention Programs:** Develop targeted retention programs for customers with shorter tenures, as this group has the highest churn. Personalized outreach or loyalty programs could make a significant impact.
3. **Improve Customer Experience:** Focus on improving the overall customer experience in areas with high churn, such as **New York City**, **Los Angeles**, and other regions with high customer density.
4. **Promotions and Discounts:** For customers in the low-price handset segment, consider offering promotions or discounts to encourage long-term retention.

**REPORT: MARKETING AND PRODUCT CREATION**

**1. OVERVIEW OF THE DATA**

Key performance metrics related to product usage and customer behavior:

* **Usage Rate**: 7.41
* **Total Revenue**: $103.19M
* **New Customer Rate**: 19.30%
* **Churn Rate**: 49.56% (High churn, an area for improvement)
* **Total Churn**: 1.03K

**2. CHURN ANALYSIS**

* **Churn by Ethnicity**: Churn is unevenly distributed across ethnic groups:
  + The **N** group has the highest churn rate (35.12K), followed by **H** (13.62K) and **S** (12.75K). It’s important to consider cultural, geographic, and specific customer needs when analyzing churn in these groups.
* **Churn by Marital Status**:
  + The **U** (Unknown) group has the highest churn rate (39.07%), followed by the **M** (Married) group (31.05%). A deeper analysis is needed to understand churn within these groups, especially in terms of societal and marital status factors, which may influence marketing and retention strategies.

**3. REVENUE ANALYSIS**

* **Total HND Price by Churn Status**:
  + **No Churn**: $4.74M (46.5% of total revenue).
  + **Churn**: $5.45M (53.5% of total revenue).

This data shows that customers who churn contribute a higher revenue. These are likely higher-spending customers, so retaining them could be crucial for maintaining revenue.

**4. REVENUE AND USAGE ANALYSIS**

* **AVG Rev vs TOT Rev**:
  + Most data points are clustered around customers with AVG Rev under $500 and TOT Rev under $10K.
  + Some outliers have AVG Rev above $500, but it is rare for TOT Rev to exceed $30K.
  + **Trend**: There is a slight positive correlation between AVG Rev and TOT Rev, indicating that as the average revenue increases, the total revenue tends to rise as well.
* **MOU Mean vs TOT MOU**:
  + Most data points are clustered around customers with MOU Mean under 100K minutes and TOT MOU under 10K minutes.
  + A few outliers appear when TOT MOU exceeds 30K minutes, but the density is much lower.
  + **Trend**: A linear relationship is observed between MOU Mean and TOT MOU, although a few outlier points break this trend.

**5. CHANGE IN REVENUE AND MOU**

* **Change in MOU and Revenue by Churn Status**:
  + **Churn = Yes**:
    - As **Change MOU** (change in usage minutes) increases, **Sum of Change Rev** (total change in revenue) tends to increase.
    - When Change MOU < 10K minutes, the revenue increase is slow. However, when Change MOU > 10K minutes, the total change in revenue increases rapidly, approaching 10K at the end of the chart.
  + **Churn = No**:
    - The data is more scattered and does not show a clear trend. The total change in revenue fluctuates as Change MOU changes.
    - Revenue growth is much slower compared to the "Churn = Yes" group, reflecting that increasing MOU has less impact on non-churning customers.

**6. CONCLUSIONS AND RECOMMENDATIONS**

* **High Churn Rate** (49.56%): This indicates a need to focus on retention strategies. Understanding the reasons behind churn, particularly in specific ethnic and marital groups, will help create targeted retention campaigns.
* **High-Value Churn Customers**: Customers who churn contribute significantly to revenue. Retaining these high-value customers will have a substantial impact on overall revenue.
* **Increase in MOU**: MOU has a clear impact on revenue. Strategies to increase MOU for high-churn customers could boost revenue, especially when Change MOU exceeds 10K minutes.
* **Segmentation by Customer Groups**: Segmenting customers by marital status and ethnicity could yield more personalized marketing strategies, potentially improving churn rates and revenue.

**7. RECOMMENDATIONS**

* Develop loyalty programs for high-risk churn customers who spend more, offering incentives to keep them.
* Focus on increasing MOU for churn-prone customers through promotions or special offers.
* Conduct deeper churn analysis based on customer segments like ethnicity and marital status to better understand the factors influencing churn and target strategies accordingly.

**REPORT: NETWORK FAILURE MANAGEMENT**

**1. NETWORK PERFORMANCE OVERVIEW**

* **Churn Rate**: 49.56%
* **Total Revenue**: 103.19 million USD
* **Average MOU (Minutes of Use)**: 513.56 minutes
* **Change in MOU**: -13.93 minutes
* **Change in Revenue**: -1.02%
* **Drop Call Rate**: 5.96%

**2. ANALYSIS BY CUSTOMER SEGMENTS**

**MOU by Dual Band**

* **Customers with Dual Band (Y)**: 38,089,731.08 minutes (majority of MOU)
* **Customers without Dual Band (N)**: 10,394,123.06 minutes
* **Total MOU (T)**: 2,710,160.55 minutes (uncategorized)
* **Other MOU (U)**: 161,979.00 minutes

**Insight**:

* Customers with Dual Band support contribute the largest share of MOU, indicating a higher demand for this feature. Improving coverage and quality of Dual Band services could help increase MOU and customer retention.

**MOU by New Cell**

* **Customers with New Cell (U)**: 33,275,295.28 minutes (64.79%)
* **Customers with New Cell (Y)**: 10,275,841.62 minutes (20.01%)
* **Customers without New Cell (N)**: 7,804,856.78 minutes (15.2%)

**Insight**:

* The largest portion of MOU comes from customers with New Cell (64.79%). This indicates that upgrading to newer devices could boost service usage. Encouraging device upgrades for existing customers and providing optimized services for this segment would be beneficial.

**MOU by Refurbished New**

* **Customers with Refurbished New (R)**: 8,655,409.87 minutes (16.85%)
* **Customers without Refurbished New (N)**: 42,700,583.82 minutes (83.15%)

**Insight**:

* Customers with refurbished new devices contribute less to the total MOU. This could be due to lower product quality or customer satisfaction. Improving the quality of these devices or encouraging customers to upgrade might help increase usage.

**3. ANALYSIS BY CUSTOMER TENURE**

**Revenue by Customer Tenure**

* **< 1 year**: 14,455,280.86 USD
* **1 year**: 4,194,900.32 USD
* **< 2 years**: 39,620,387.17 USD
* **< 3 years**: 27,548,413.56 USD
* **< 4 years**: 8,982,268.72 USD
* **2 years**: 3,036,917.69 USD
* **3 years**: 1,487,028.53 USD
* **4 years**: 668,871.57 USD
* **< 5 years**: 3,189,477.71 USD
* **5 years**: 7,020.71 USD
* **< 6 years**: 1,931.99 USD

**Insight**:

* The majority of revenue comes from customers with less than 2 years of tenure (67,168,158.03 USD). However, revenue from long-term customers decreases over time. This suggests that there may be a drop in service usage or a lack of retention strategies to keep long-term customers engaged.

**Drop Call Rate by Customer Tenure**

* **< 1 year**: 6.8%
* **1 year**: 5.8%
* **< 2 years**: 5.8%
* **2 years**: 5.5%
* **< 3 years**: 5.3%
* **3 years**: 5.2%
* **< 4 years**: 5.3%
* **4 years**: 8.7%
* **5 years**: 1.3%
* **< 6 years**: 1.2%

**Insight**:

* The drop call rate is highest for customers under 1 year (6.8%) and decreases over time. However, there is a spike in drop calls for customers with 4 years of tenure (8.7%). This may indicate network issues or equipment problems that need to be addressed to maintain service quality.

**Churn Rate by Customer Tenure**

* **1 year**: 61.86%
* **< 2 years**: 51.80%
* **2 years**: 51.48%
* **< 3 years**: 50.13%
* **< 4 years**: 48.13%
* **< 5 years**: 43.97%
* **< 6 years**: 50.00%
* **3 years**: 46.69%
* **4 years**: 47.75%
* **5 years**: 20.00%

**Insight**:

* The churn rate is highest for customers under 1 year (61.86%) and remains high for those under 2 years (51.80%). This indicates that early customer experiences are critical, and improving service quality and satisfaction during the first years can help reduce churn. Churn significantly drops after 5 years of tenure (20%).

**4. RECOMMENDATIONS**

1. **Improve Network Quality**:
   * Especially focus on reducing the drop call rate, particularly for new customers (under 1 year) and customers with 4 years of tenure. This will enhance customer satisfaction and reduce churn.
2. **Enhance Customer Engagement for New Customers**:
   * With high churn rates in the first 2 years, implementing customer retention strategies such as loyalty programs, personalized offers, and improved customer support can help reduce early churn.
3. **Encourage Device Upgrades**:
   * Customers using refurbished new devices have lower MOU. Encouraging these customers to upgrade their devices to more advanced models (e.g., dual-band or new cell devices) can improve usage and overall service engagement.
4. **Develop Long-Term Customer Packages**:
   * For customers with 3-5 years of tenure, offering special packages, loyalty rewards, or exclusive services could help retain them and improve their service usage.

**REPORT: FRAUD MANAGEMENT**

**1. OVERVIEW**

The data provided reflects key metrics related to fraud management, customer churn, revenue, and user behavior, including Minutes of Use (MOU) and ARPU (Average Revenue Per User). The data also analyzes customer segments by region, income level, and customer tenure.

**2. OVERALL REVENUE AND PERFORMANCE**

* **Total Revenue**: 103.19M USD, a significant revenue amount, but with a high churn rate and drop call rate, suggesting potential issues with customer retention and fraud.
* **Drop Call Rate**: 84.36%, which is high, indicating connectivity or service quality issues that could lead to customer dissatisfaction and higher churn.
* **Churn Rate**: 49.56%, a very high churn rate, reflecting potential dissatisfaction or issues in maintaining long-term customer relationships.
* **Change in MOU**: A decrease of 1.39 million minutes, indicating reduced usage of the service, which could affect future revenue.
* **ARPU (Average Revenue Per User)**: 1.03K USD, a reasonable value, but lower than expected given the high churn rate.

**3. ANALYSIS BY REGION**

The highest drop call effectiveness (VCE) was recorded in the following areas:

* **New York City**: 103,046.83, the highest, suggesting that this region has significant service or fraud issues that need attention.
* Other major areas such as **Los Angeles** (50,777.00), and **DC/Maryland/Virginia** (48,877.67) also have high VCE, indicating a need to improve service quality and fraud management in these areas.

**4. ARPU BY CUSTOMER TENURE**

* **Customers with 4 years or more** have the highest ARPU at **3,012.94**, indicating that long-term customers generate higher revenue.
* **Customers under 1 year** have the lowest ARPU at **547.34**, which reflects lower service consumption or potential dissatisfaction with the service, contributing to high churn.
* **ARPU declines with shorter customer tenure**, suggesting the company may need to improve customer experience and retention strategies for newer customers to increase their long-term value.

**5. CHURN RATE BY INCOME**

* Churn rates are relatively high across all income groups, ranging from **47.08% to 51.43%**. This indicates that customer retention issues are not significantly influenced by income level.
* The **5.78 income group** has the highest churn rate (**51.43%**), suggesting that this group may be dissatisfied with the service or facing unique challenges.

**6. MOU AND REVENUE BY CUSTOMER TENURE**

* **Customers under 2 years** contribute the most in terms of **MOU** and **Revenue**:
  + MOU: 297,945,094.50 minutes
  + Revenue: 39,620,387.17 USD
* **Customers under 1 year** show high MOU and revenue but also exhibit high churn, which may impact future revenue potential.
* **Customers with more than 5 years** have lower MOU and revenue, indicating that retaining long-term customers may not be as profitable unless strategies are adjusted (e.g., loyalty programs or enhanced services).

**7. CHANGE IN REVENUE AND MOU BY INCOME**

* The **5.78 income group** shows the most significant decline in both MOU (-507,582.23) and revenue (-38,691.48), indicating that higher-income customers may be leaving or using fewer services.
* Other income groups also show decreases in MOU and revenue, suggesting that the company faces challenges in retaining and engaging customers across all income levels.

**8. CONCLUSION AND RECOMMENDATIONS**

1. **Improve Service Quality**: Address connectivity and service quality issues, especially in regions like New York City, Los Angeles, and DC/Maryland/Virginia, where drop call rates are the highest.
2. **Reduce Churn**: The high churn rate requires a focus on retention strategies, especially for new customers (under 1 year). Consider loyalty programs, targeted promotions, and improved customer support to reduce churn.
3. **Optimize ARPU**: Focus on increasing ARPU for newer customers and incentivize long-term customers with premium services or personalized offers to maintain high-value accounts.
4. **Focus on High-Income Customers**: The 5.78 income group shows the largest decline in both MOU and revenue, suggesting that strategies tailored to high-income customers—such as premium offerings or personalized experiences—should be prioritized.