



10Alytics
data & strategy

CONNECTTEL

CUSTOMER CHURN ANALYSIS PROJECT

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INTRODUCTION



ABOUT ME

Data tells a story, and I'm here to translate it into actionable insights. I'm Chigozirim Edmud Wali, and my data science expertise has been directed towards analyzing the complex issue of customer churn. My research uncovers the hidden drivers behind customer loss and proposes evidence-based strategies to turn the tide and cultivate enduring customer loyalty."



THE IMPACT OF CUSTOMER CHURN ON THE COMPANY'S BOTTOM LINE:

O1

Lost Revenue: Losing customers means losing ongoing revenue streams. According to the data available, the total revenue generated from customers within 72 months (6 years) is \$16,056,168.7, which is an average of \$2,676,028.2 per annum. With a churn rate of 26.54% within the same time, this means a potential \$710,217.89 per annum could be lost to customers who churn.

O2

Brand Reputation & Employee Morale: Churn can damage brand image and customer trust. Potential negative feedback, reviews, and word-of-mouth impact can further impact future customer acquisition and retention.

High churn can negatively affect employee morale, impacting team productivity and engagement, limited growth opportunities, job insecurity, etc.

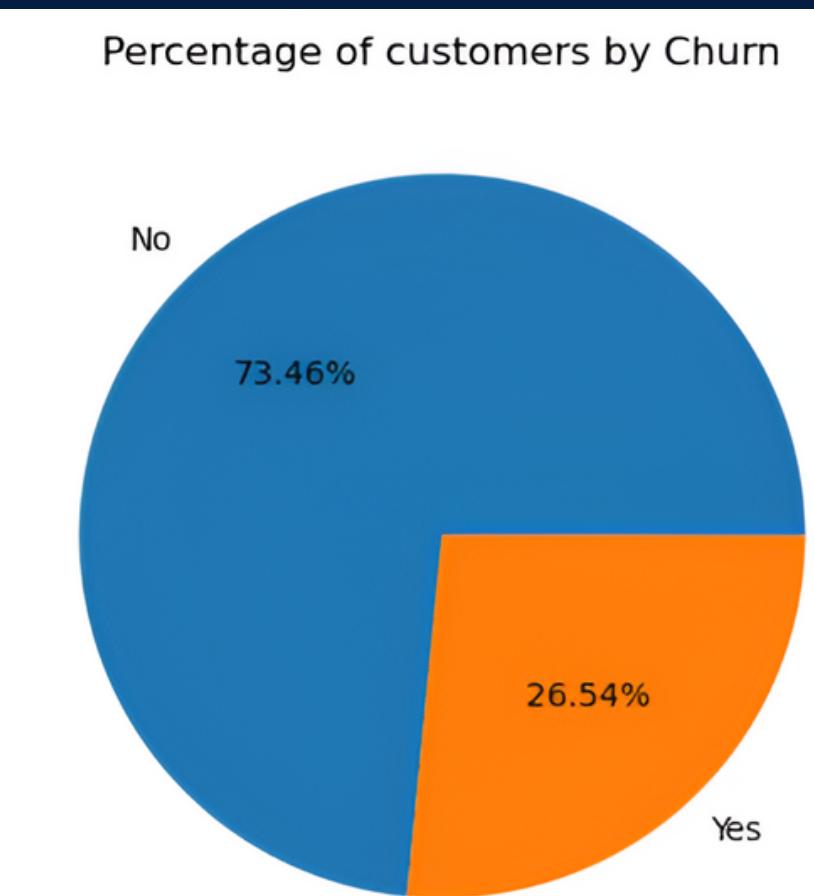
O3

The average churn rate in the telecommunications industry is 30% to 35% per annum and though it may seem as though ConnectTel has not reached that point, it is important that we do the best we can to further reduce the churn rate of our customers.

From the data available, we see that the customers who churn do so within an average of 12 months, mostly due to high charges.



Percentage of customers by Churn



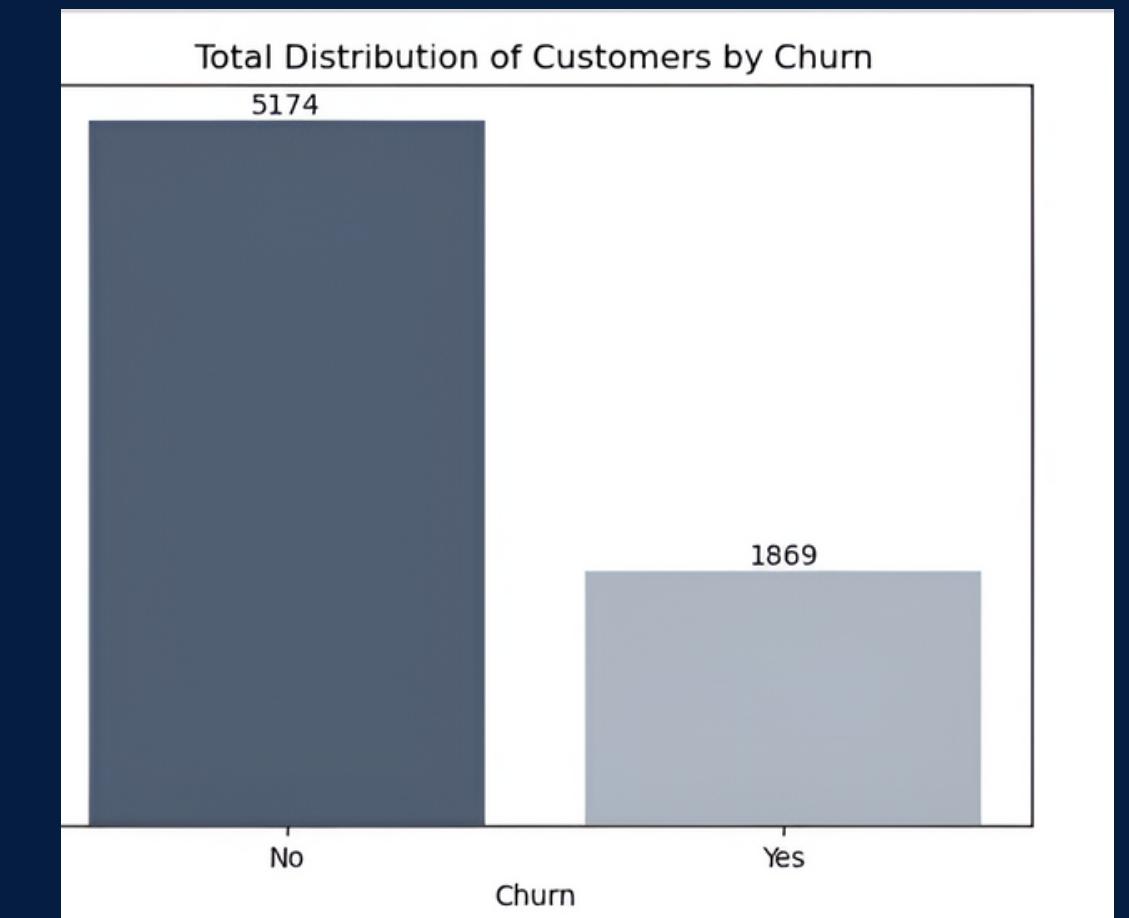


CHURN LANDSCAPE

Analysis

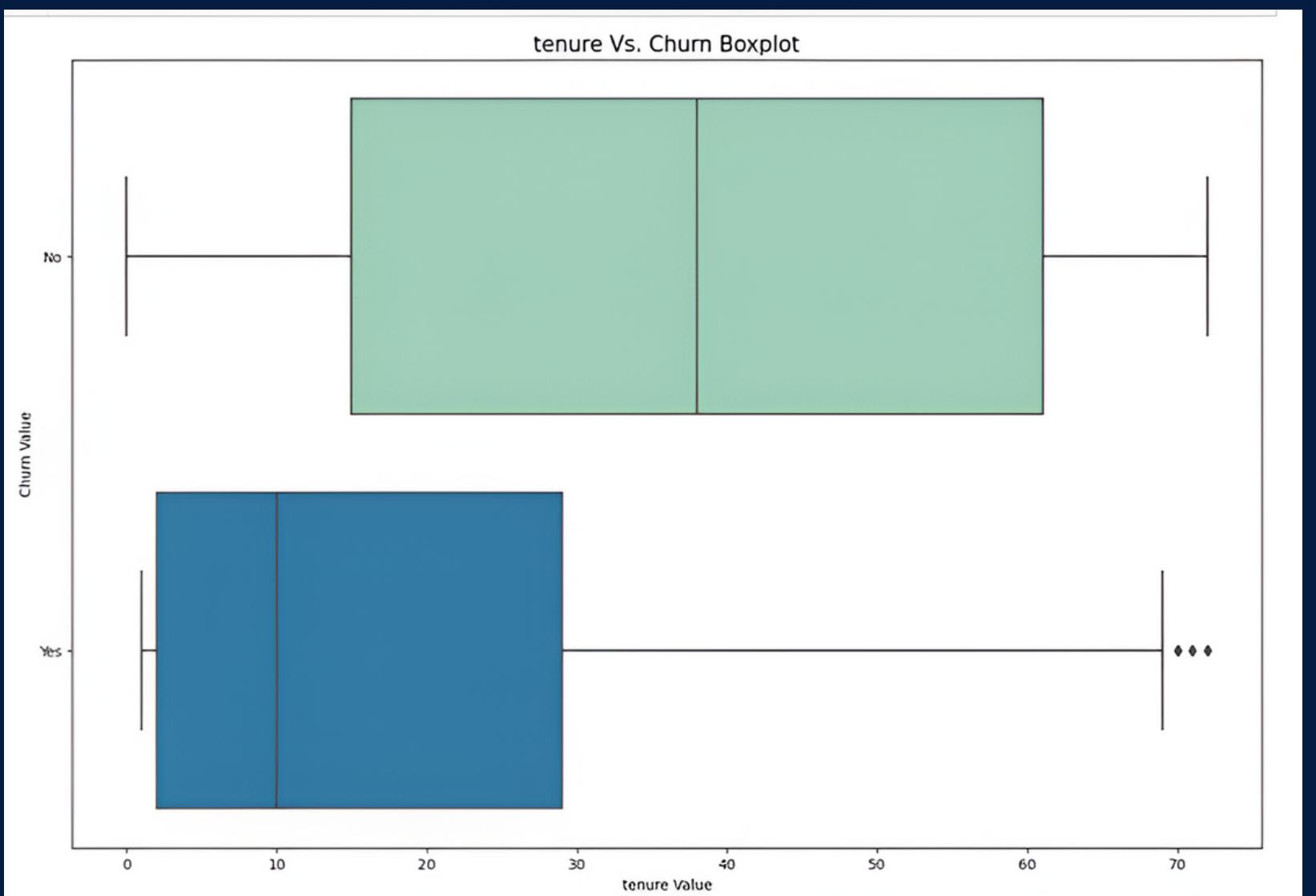
Churn Rate

- From the bar chart we can see that among a total of 7043 customers, 5174 (73.46%) still maintain a relationship with The company, while 1869 (26.54%) customers are no longer subscribing to the services of ConnectTel.



Tenure vs Churn Boxplot

- Tenure as a churn risk factor:** Customers with shorter tenures might be at higher risk of churn, possibly due to factors like initial dissatisfaction, promotional offers expiring, or lack of established relationships with the company.
- Median tenure:** The median tenure for non-churned customers (around 38 months) is higher than the median tenure for churned customers (around 10 months). This suggests that customers who churn tend to do so earlier in their relationships with the telecommunications company.
- Customer segmentation:** The difference in tenure distribution between churned and non-churned customers suggests potential value in segmenting customers based on tenure for targeted retention strategies. For example, focusing on early engagement and satisfaction efforts for customers with shorter tenures might be beneficial.

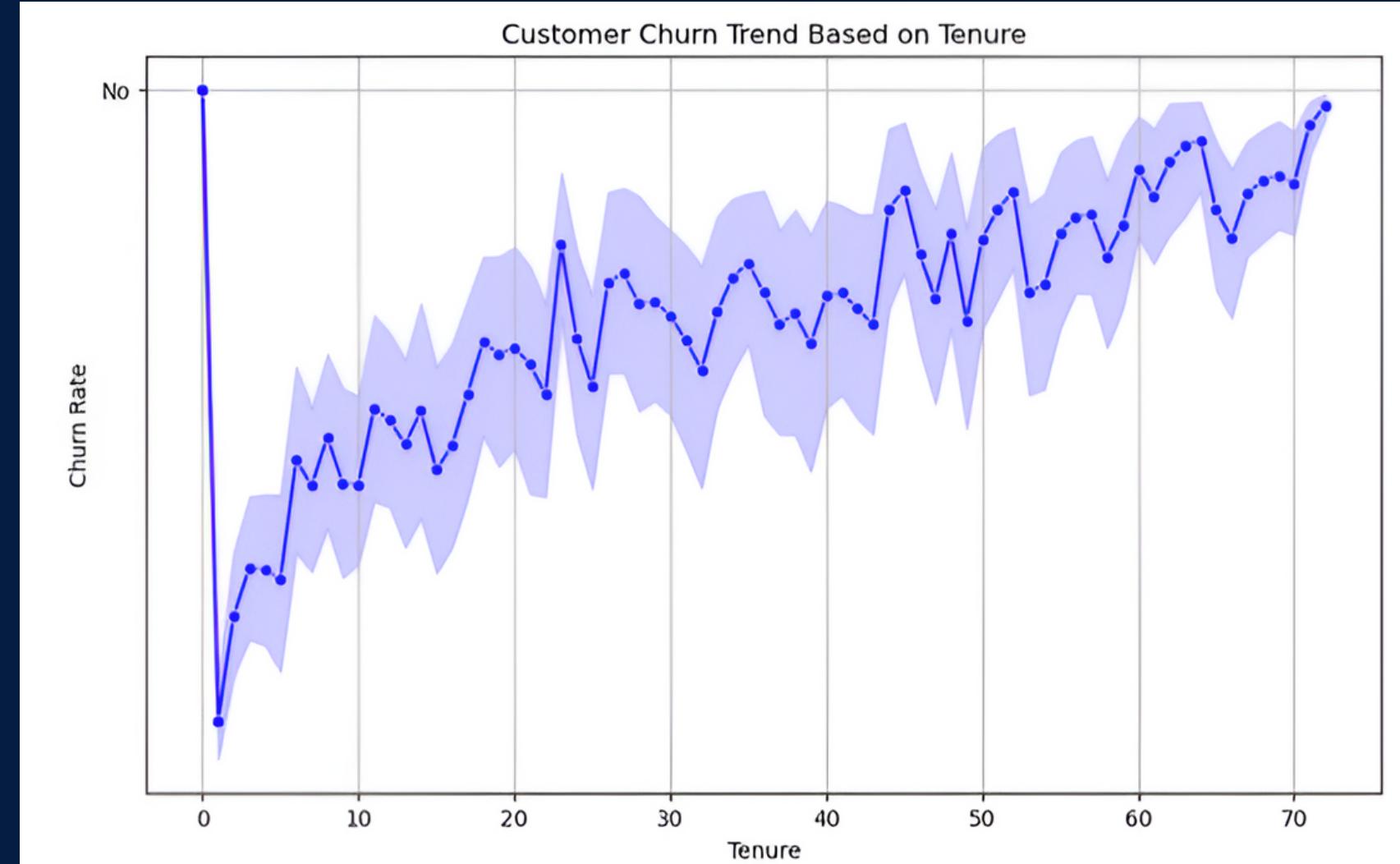


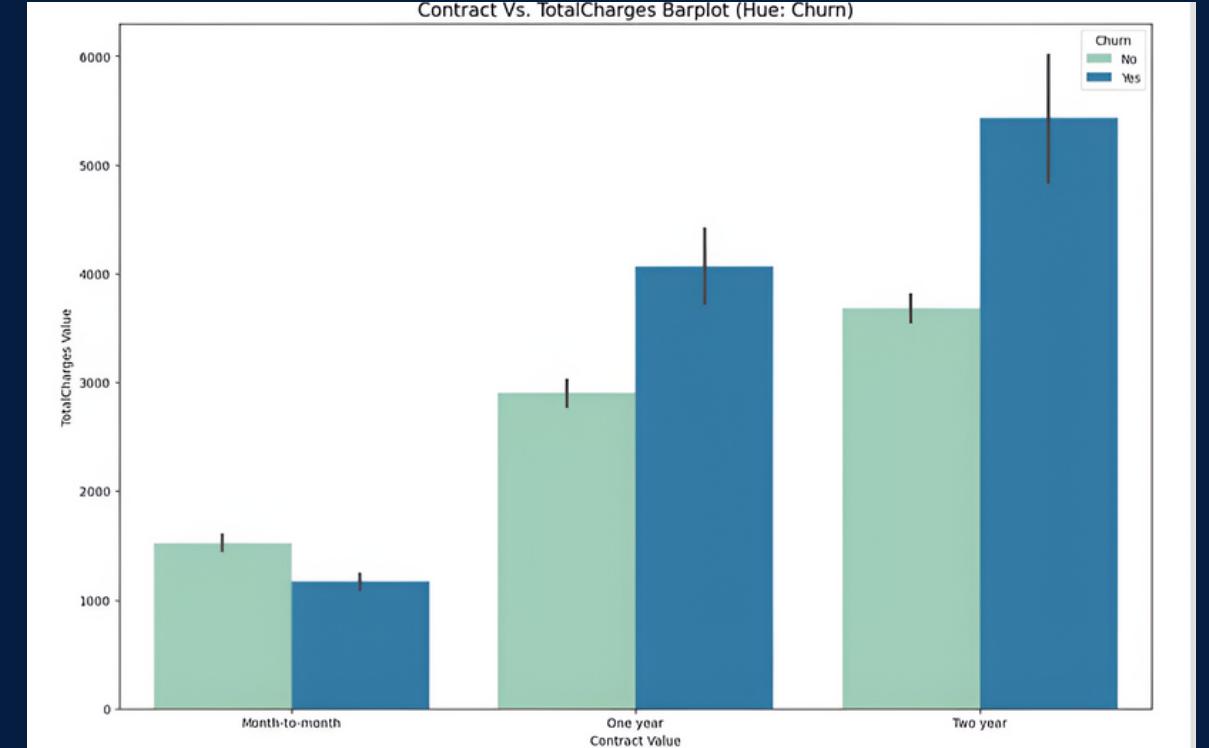
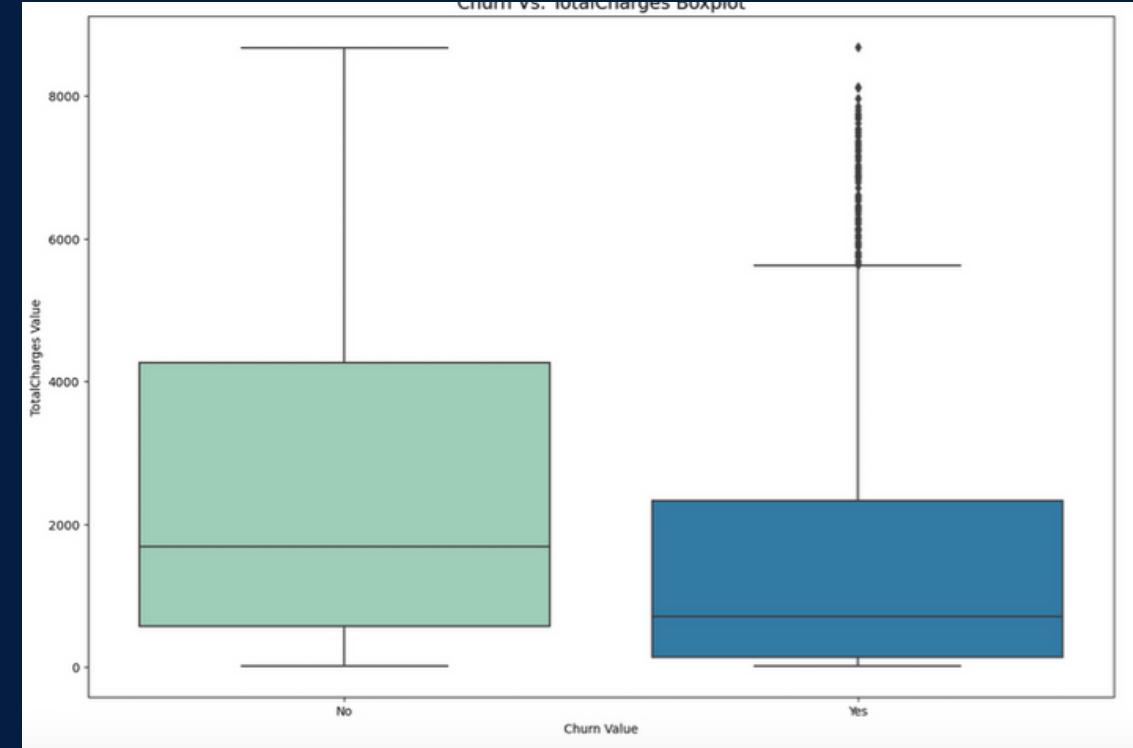
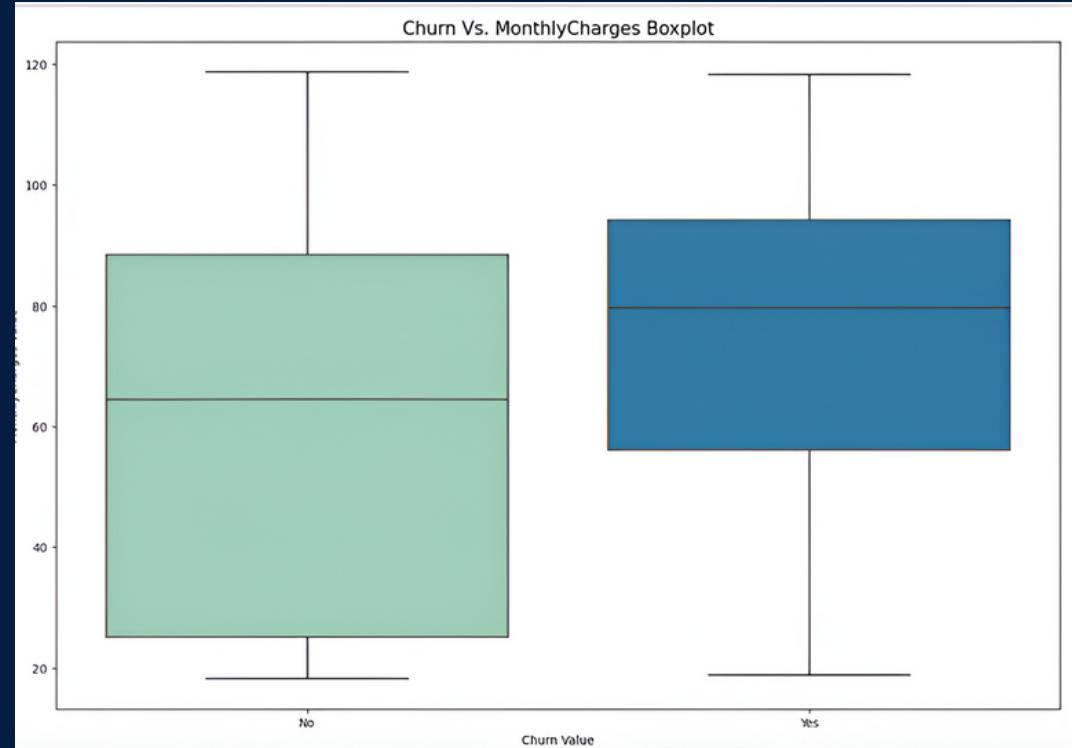
Tenure vs Churn Trend Line

- There's a steep drop in churn rate around the 3-month mark, indicating that this might be a critical period for customer retention efforts.
- The churn rate stabilizes after around 2 years, suggesting that customers reaching this tenure are highly likely to stay.

Possible Reasons

- The high initial churn rate could be due to various factors like dissatisfaction with the service, difficulty during onboarding, or unmet expectations.
- The rapid decrease in churn within the first year could be attributed to successful onboarding experiences, resolution of initial issues, or building of trust and value.
- The gradual decline beyond one year might be influenced by factors like habit formation, switching costs, and increased perceived value of the service with longer use.





Churn vs Monthly Charges

- Charge distribution: The distribution of monthly charges appears left-skewed for both churned and non-churned customers, with most customers having higher charges.
- Median charges: The median monthly charge for churned customers (around \$80) is slightly lower than the median for non-churned customers (around \$65). This suggests that a simple comparison of medians doesn't reveal a strong relationship between higher charges and churn.
- Box sizes and IQR: The boxes for non-churned customers are wider than the boxes for churned customers, indicating a greater spread in monthly charges among those who haven't churned. Additionally, the interquartile range (IQR) for non-churned customers is slightly larger, further highlighting the wider range of charges in this group.

Churn vs Total Charges

- The median Total Charge for the non-churned customers (1683.8) is significantly higher than the median for churned customers (703.55). This notable difference suggests a potential relationship between lower total charges and higher churn risk.
- There is a higher spread in the total charges of non-churned customers.
- Outliers with higher total charges are present only in the churned group, suggesting specific customer segments with high spending who do not remain loyal.
- Customers Who spend more with the company might be more likely to remain loyal. Understanding the characteristics and motivations of this high charge, loyal customers could provide valuable insights for retention strategies.

Contract Vs Total Charges

- Month-to-Month Retains More: The "No Churn" bar for month-to-month contracts is taller than the "Yes Churn" bar, indicating a higher proportion of customers sticking with month-to-month plans compared to those who Churn.
- Longer Contracts Churn Less: The "Yes Churn" bars remain taller than the "No Churn" bars for one-year and two-year contracts.
- Month-to-month appears to have relatively higher customer retention rate compared to longer-term contracts. Therefore, ConnectTel should improve the month-to-month contract package's total charge.



DRIVERS OF CHURN

These insights and solutions aim to help the company understand and address key correlations in its data, allowing for strategic decision-making to enhance customer satisfaction, manage costs, and reduce churn.

KEY CORRELATIONS DISCOVERED FROM THE HEATMAP

Though the Heat Map may not be clear, I would further look into the visuals that clearly reveal the correlations in further slides. Below is a summary of the correlations:



Streaming Movies and Streaming TV vs. Monthly Charges (0.63):

There is a moderately positive relationship (correlation of 0.63) between customers who stream movies and TV and their monthly charges.

- The positive correlation suggests that as the tendency to stream movies and TV increases, monthly charges tend to rise.
- While the trend is noticeable, the value is not close to 1, indicating that it's not an absolute correlation.
- Potential solutions include targeted marketing, data compression technologies, and personalized recommendations to manage costs and improve customer satisfaction.



Tenure vs. Total Charges (0.83):

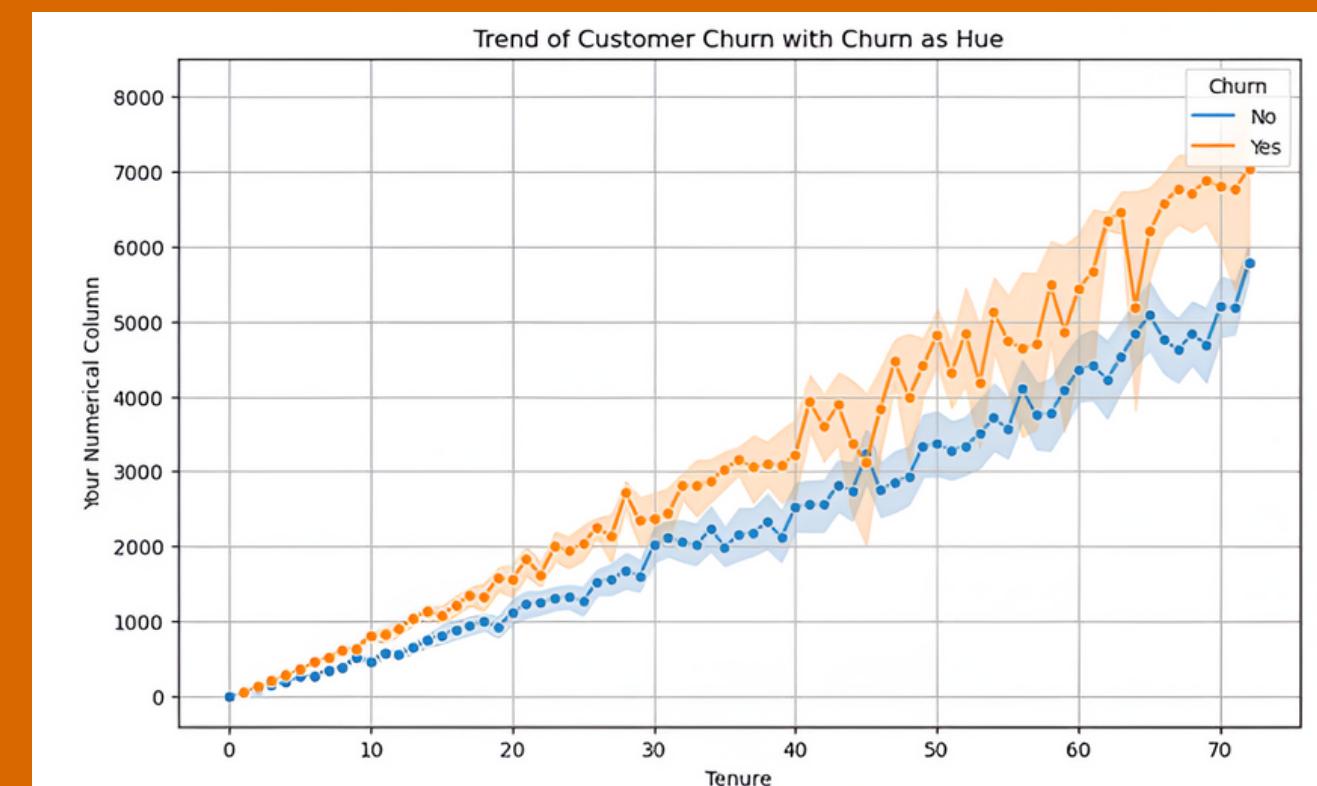
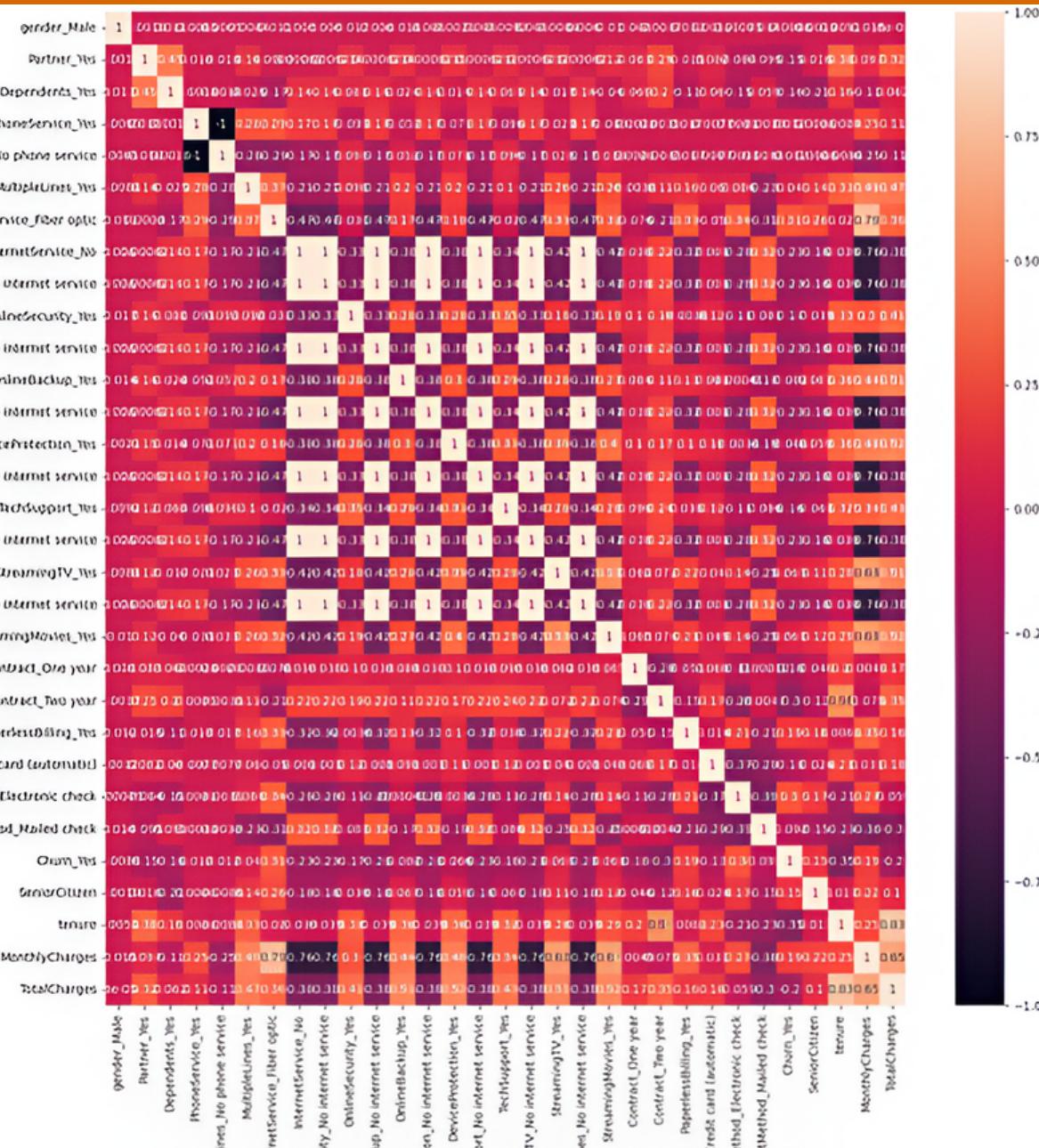
- There is a high positive relationship (correlation of 0.83) between customer tenure and total charges.
- Customers with longer tenure tend to have higher total charges, indicating increased spending over time.
- Solutions involve targeted retention campaigns, identifying churn triggers, and implementing pricing models that reward loyalty to enhance customer satisfaction and encourage longer stays.



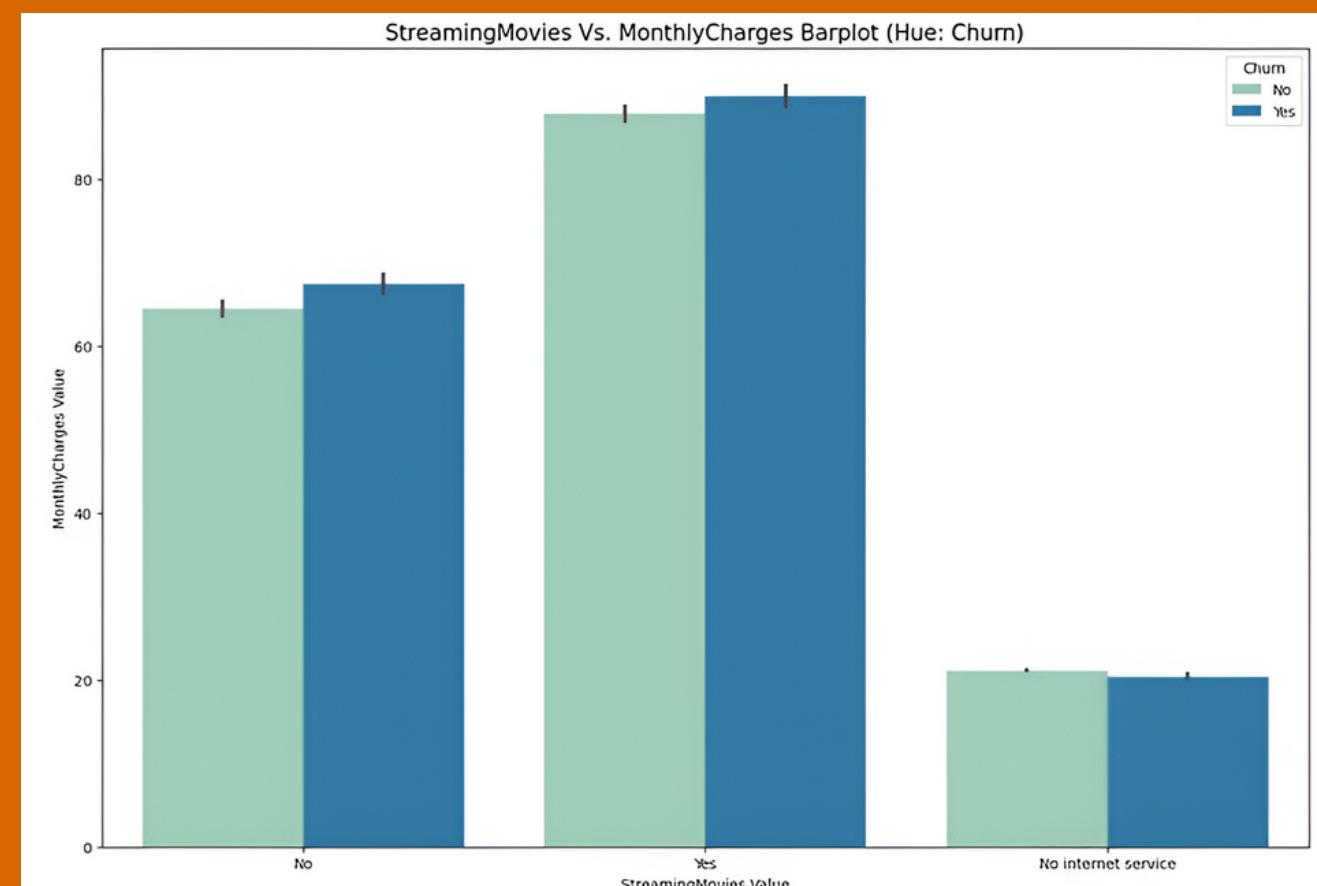
Internet Service (Fibre Optic) vs. Monthly Charges (0.79):

- There is a high positive relationship (correlation of 0.79) between customers using Fibre Optic internet and their monthly charges.
- Choosing Fibre Optic is significantly associated with higher monthly charges.
- Solutions include clear communication of benefits, targeted marketing efforts, tiered pricing plans, and providing tools for customers to manage their data usage effectively.

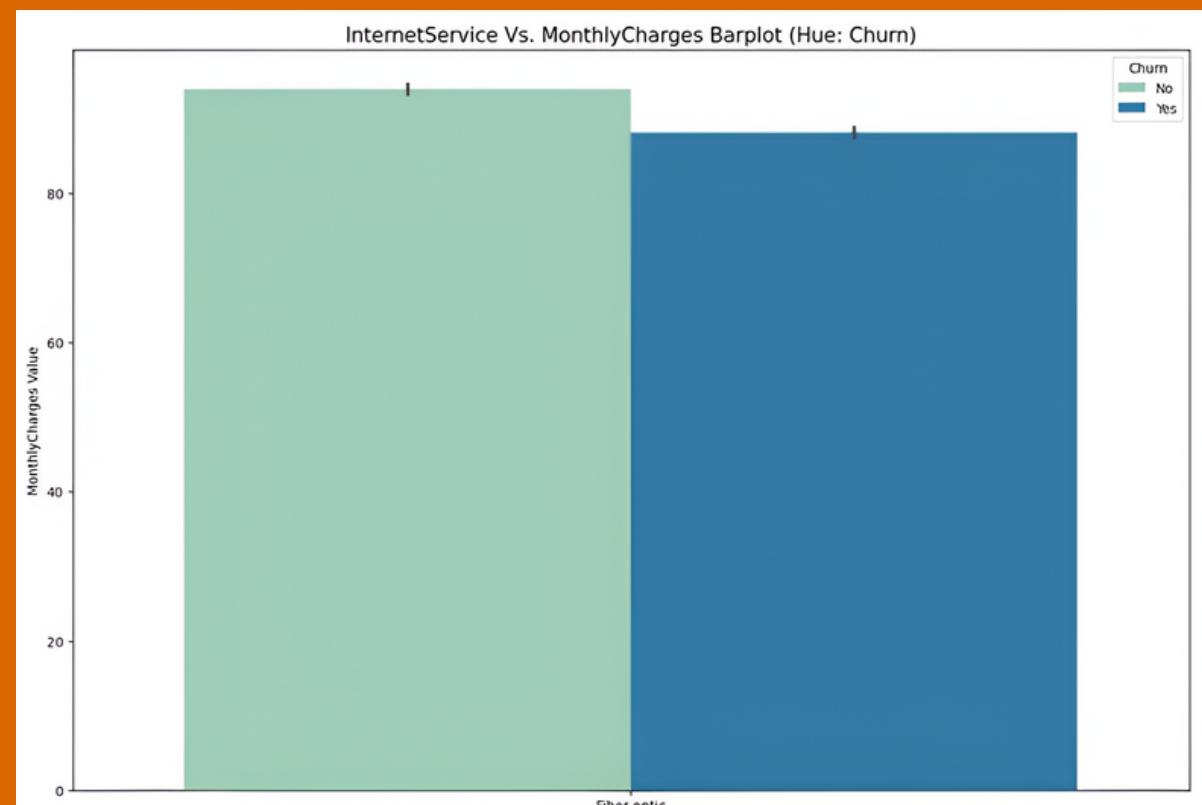
Key Correlations discovered from the Heatmap



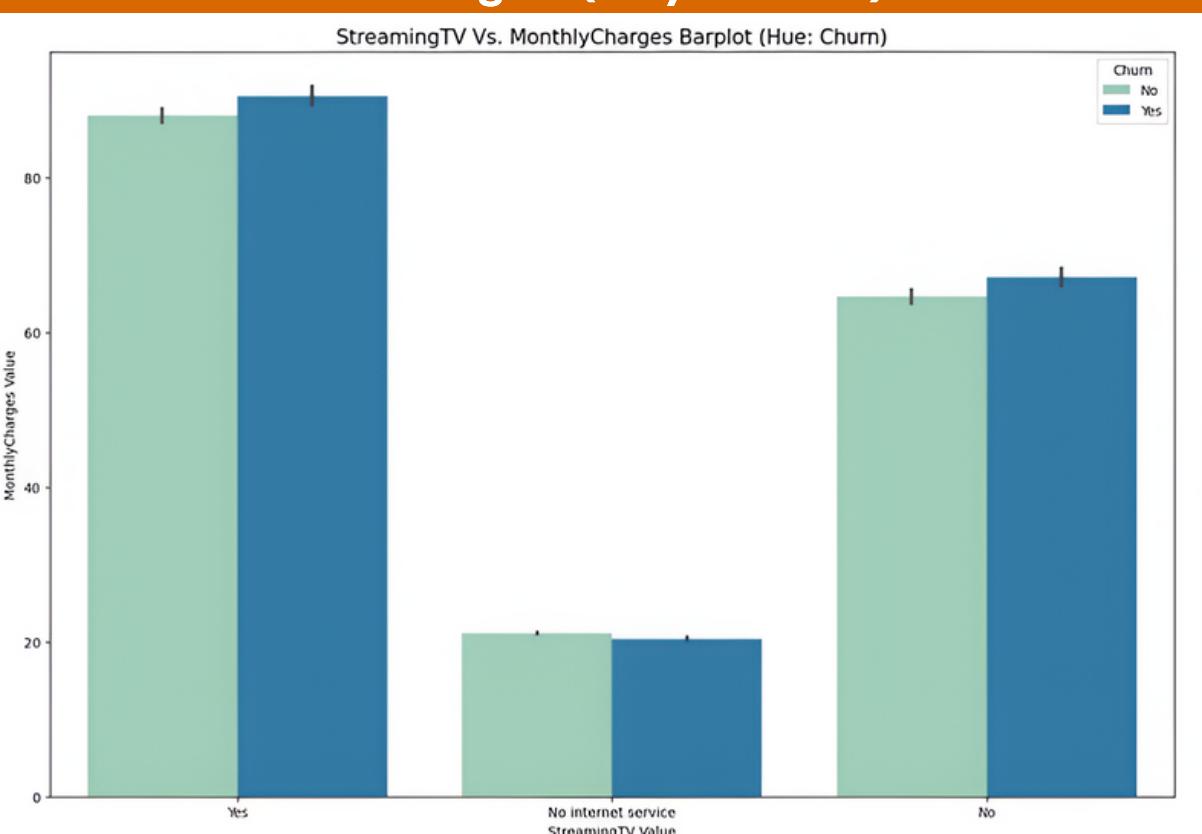
Tenure vs. Total Charges (Key: Churn)



Streaming Movies vs. Monthly Charges (Key: Churn)



Internet Service (Fibre Optic) vs. Monthly Charges (Key: Churn)



Streaming TV vs. Monthly Charges (Key: Churn)

CHURN PREDICTION AND PREVENTION



Data Sources

I utilized the data set from ConnectTel as my data source. The data dictionary consists of the following features: Gender, Senior Citizen, Partner, Dependents, Tenure, Phone Service, Multiple Lines, Internet Security, Online Security, Online Backup, Device Protection, Tech Support, Streaming TV, Streaming Movies, Contract, Paperless Billing, Payment Method, Monthly Charges, Total Charges and Churn.

Feature Engineering

I transformed raw data into relevant features for analysis, and for this presentation, there was more focus on the features; Churn, Tenure, Contract, Streaming TV, Streaming Movies, Internet Service (Fiber Optic), Monthly Charges and Total Charges.

Model Selection

Based on the data and business, the metrics I used were Accuracy, Logistics Loss, Precision, Recall, F1 Score, ROC AUC Curves and Confusion Matrix.

The Machine Learning models I used were Logistics Regression, Gaussian Naive Bayes, Decision Tree Classifier, Random Forest Classifier and Gradient Boosting Classifier.

I split the data into training and testing sets, trained the model on the training set, and optimized its parameters through the various models.



CONCLUSION & RECOMMENDATION

Key Findings & Solutions

Problem Definition 1: Optimizing customer pricing and retention strategies.

- The data suggests strong relationships between the following: Internet service type, Monthly charges and Churn ;Streaming Movies, Monthly Charges and Churn; Streaming TV, Monthly Charges and Churn ; Tenure and Total Charges; Contract and Total Charges.
- We can leverage data mining to analyze these relationships in detail, identify high-value customer segments, and predict churn risk.

Solution:

- Potential solutions include targeted marketing, data compression technologies, and personalized recommendations to manage costs and improve customer satisfaction.
- Solutions involve targeted retention campaigns, identifying churn triggers, and implementing pricing models that reward loyalty to enhance customer satisfaction and encourage longer stays.
- Solutions include clear communication of benefits, targeted marketing efforts, tiered pricing plans, and providing tools for customers to manage their data usage effectively.
- Ensure a consistently positive customer experience throughout the entire lifecycle, not just during initial acquisition. By building strong relationships and delivering valuable services, you can keep customers satisfied and incentivize them to stay longer and spend more..



Thank You For Your Time

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