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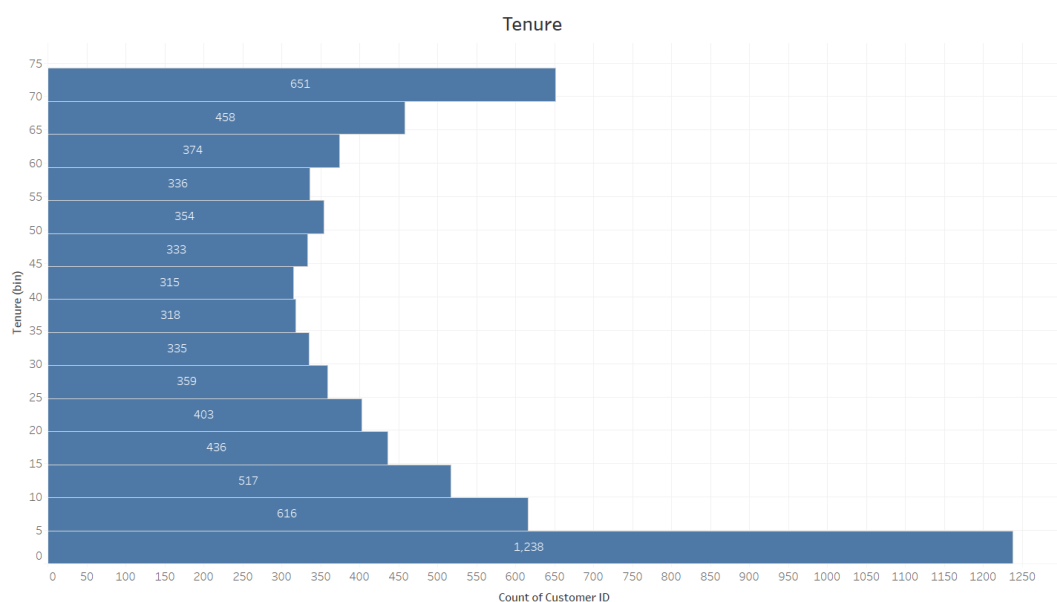
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## Insights and Recommendations for Preventing Customer Churn

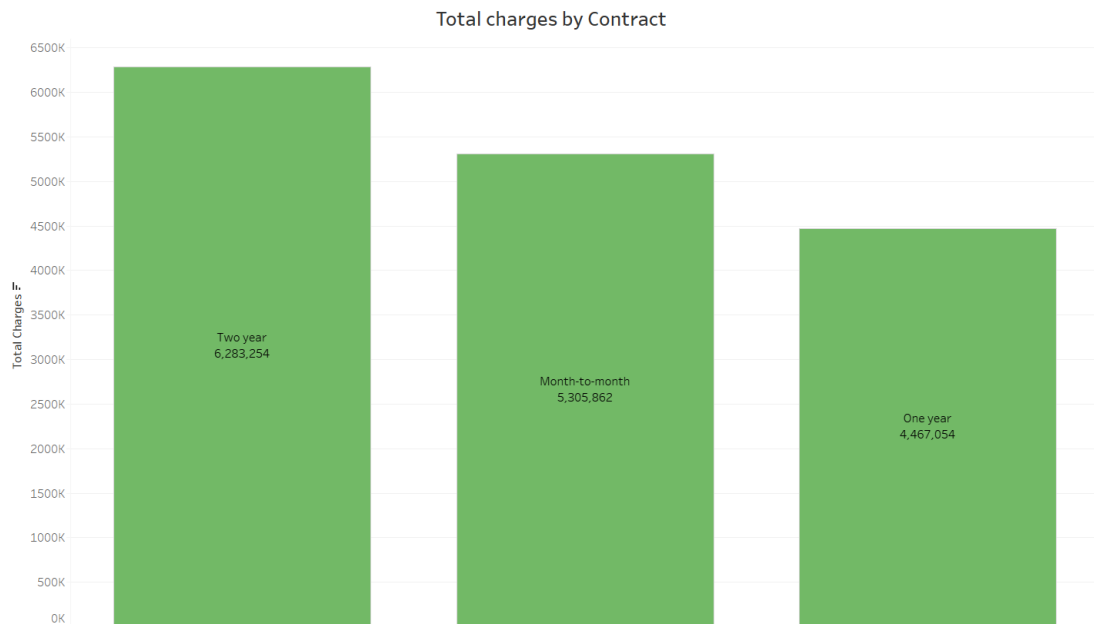
The dataset contains information on 7043 customer records. Each record includes 33 features, such as the customer's demographics, account information, and service usage. The target variable is Churn, which indicates whether a customer has churned (left the company) within the last month. The churn rate in the dataset is 26.5%, which means that about 1 in 4 customers churned.

The following are the most important features for predicting customer churn:

- **Tenure:** The longer a customer has been with a company, the less likely they are to churn. This is because they have invested more time and money into the relationship and are more likely to be satisfied with the service.



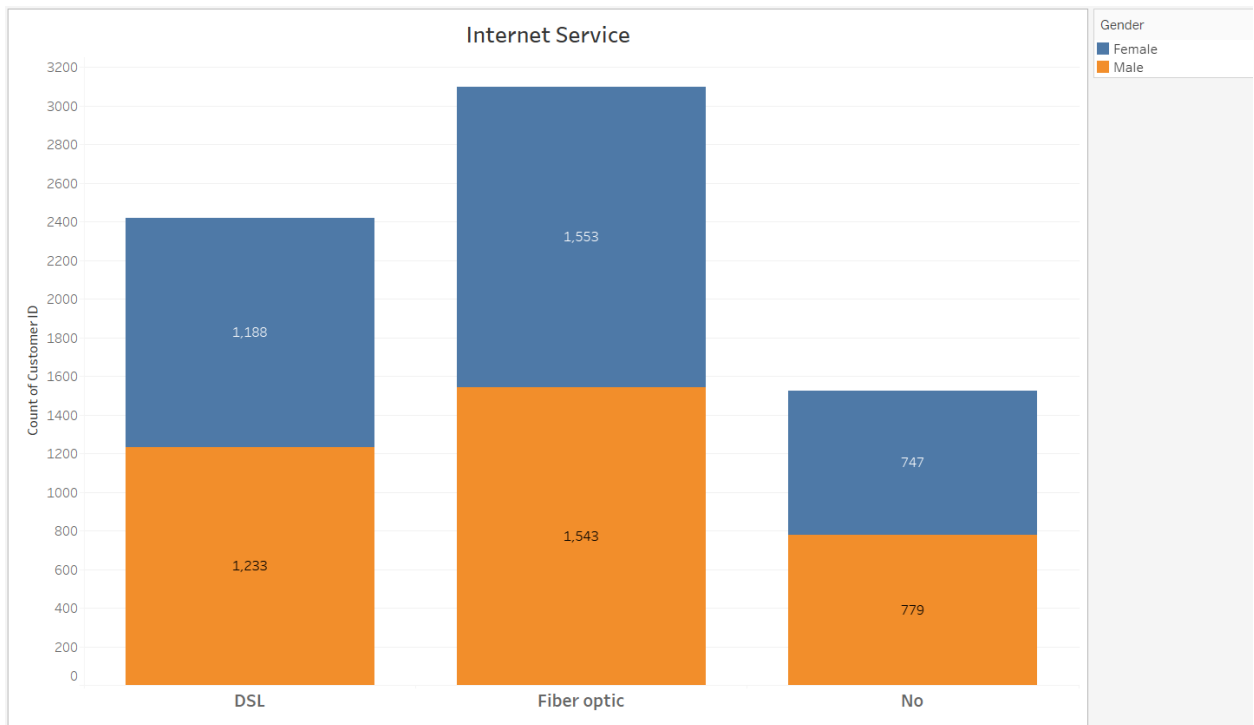
- **Total charges:** Customers who have paid more money to the company in total are less likely to churn. This is because they are more likely to be locked into a contract or have a long history with the company.



- **Multiple lines:** Customers with more phone lines are more likely to churn. This is because they are more likely to be able to find a better deal elsewhere.

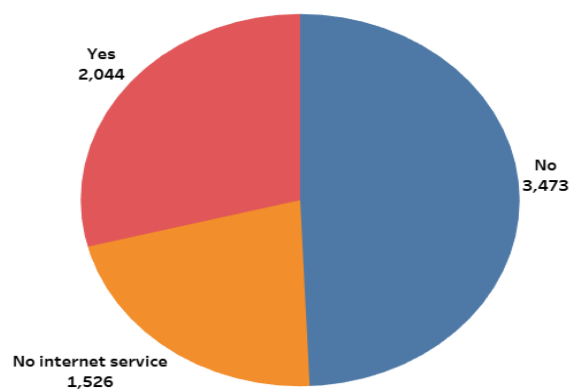


- **Internet service:** Customers with internet service are less likely to churn. This is because internet service is a necessity for many people and they are less likely to switch providers.

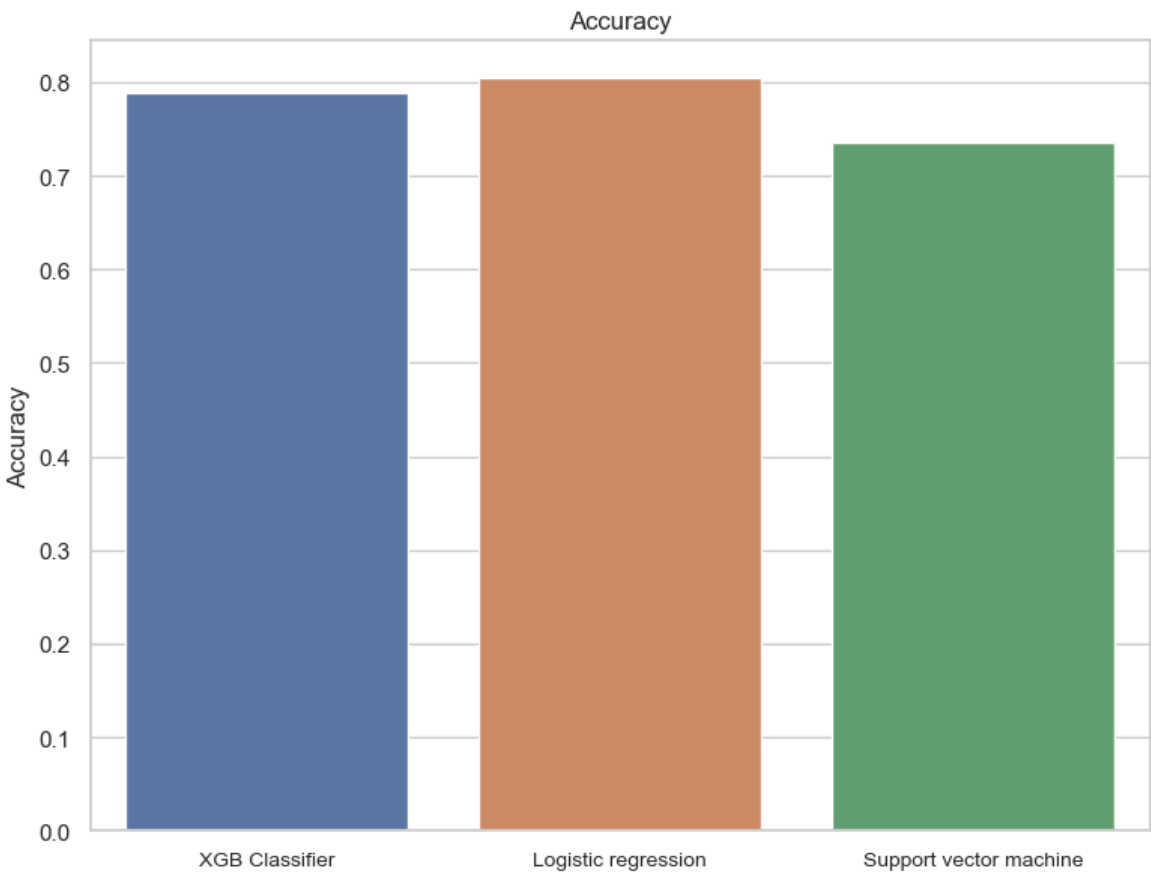


- **Tech support:** Customers with tech support are less likely to churn. This is because tech support is a valuable service and customers are less likely to switch providers if they are already satisfied with the service.

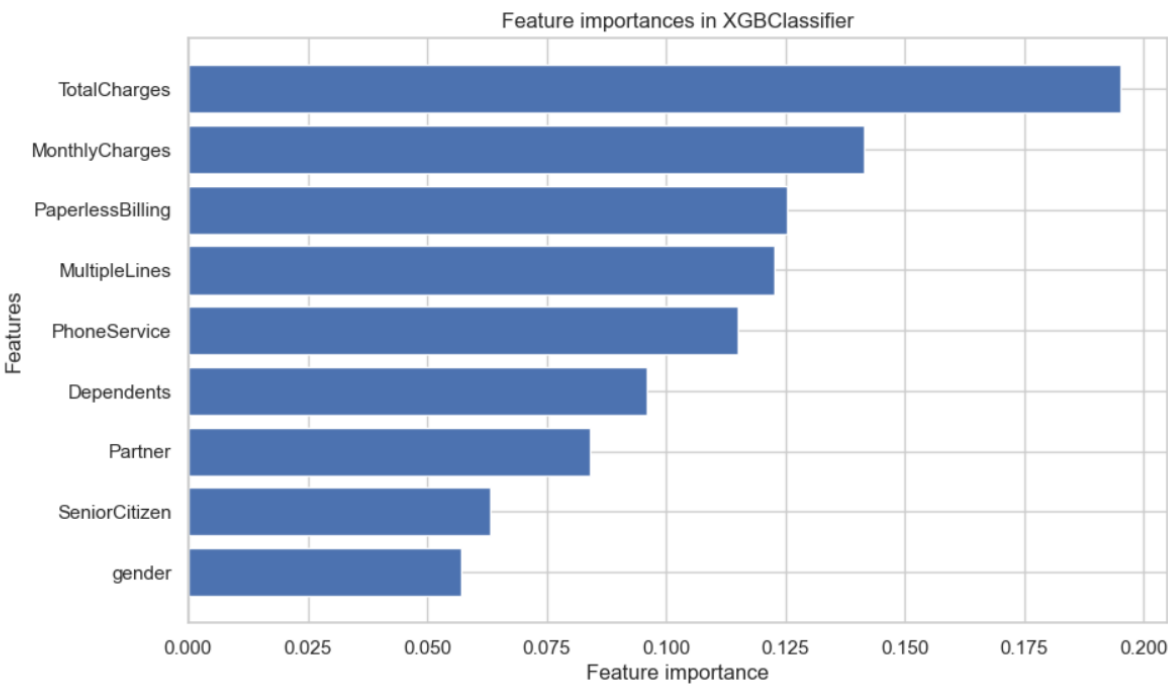
Tech support



Model Accuracy Graph:



Some Important factors contribute most to customer churn.



Final Deployment:

We develop an HTML file in VS Code that encompasses the fundamental layout for the web page in support of the model report. To enhance the appearance of said web page, we employ CSS. In a collaborative effort, we amalgamate these files with the Flask file, which houses the model and functionality of the web page. The model file is extracted using the Pickle library and subsequently uploaded to Flask for prediction purposes.

Lastly, we have submitted a folder that encompasses all the necessary supportive files.

## Subscription Prediction

Gender:

SeniorCitizen:

Partner:

Dependents:

PhoneService:

MultipleLines:

PaperlessBilling:

MonthlyCharges:

TotalCharges:

### Prediction:

The customer will end the subscription

There are a few ways to improve the accuracy of churn prediction models:

- **Remove outliers:** Outliers are data points that are significantly different from the rest of the data. They can skew the results of the models, so it is important to remove them before training the models.
- **Encode categorical features:** Categorical features are features that can take on a limited number of values, such as gender and payment method. These features need to be encoded before they can be used in the models. There are a few different ways to encode categorical features, but the most common way is to use one-hot encoding.
- **Use a more complex model:** The simplest model for predicting churn is a logistic regression model. However, you can get better results by using a more complex model, such as a decision tree or a random forest.

Here are some recommendations for preventing customer churn:

- **Offer discounts to customers who are about to churn:** This is a common way to prevent churn. By offering a discount, the company can make it more attractive for the customer to stay.
- **Improve customer service:** Good customer service can go a long way in preventing churn. Customers who are happy with the customer service are less likely to leave.
- **Send out surveys to customers to get feedback:** This is a good way to get feedback from customers about what they like and dislike about the company. This feedback can be used to improve the customer experience and prevent churn.
- **Personalize the customer experience:** This means tailoring the customer experience to the individual customer's needs and preferences. This can be done by using data analysis to identify customer segments and then targeting those segments with personalized offers and messages.
- **Offer cross-sell and upsell opportunities:** This means offering customers products or services that they are likely to be interested in. This can help to increase customer satisfaction and prevent churn.