Patient Churn Analysis

Project Overview

The main objective of this project is to understand patient behaviour and identify the key factors that lead to patient churn. The analysis helps healthcare organisations improve patient retention and service quality through data-driven insights.

The dataset contains patient demographic details, service usage information, satisfaction ratings, and churn status. These attributes are used to analyse behavioural patterns and trends related to patient churn.

Data Source

- **Dataset:** Patient Churn Dataset
- **Domain:** Healthcare Analytics
- **Tool Used:** MySQL

Problem Statement

Healthcare organisations face challenges in retaining patients due to low engagement, poor satisfaction, and irregular visit patterns. Identifying patients who are likely to churn and understanding the factors influencing churn is essential for improving service quality and patient retention. This project aims to analyse patient churn data using MySQL to identify churn patterns and key contributing factors such as tenure, visit frequency, and satisfaction levels, thereby supporting effective decision making.

Features

- Patient_ID: Unique identification number assigned to each patient
- Age: Age of the patient in years.
- Gender: Gender of the patient.
- State: State where the patient resides.
- Tenure_Months: Number of months the patient has been associated with the healthcare service.
- Specialty: Medical specialty or department consulted by the patient.
- Insurance_Type: Type of insurance coverage held by the patient.

- Visits_Last_Year: Total number of visits made by the patient in the last year.
- Missed_Appointments: Number of appointments missed by the patient.
- Days_Since_Last_Visit: Number of days since the patient's most recent visit.
- Last_Interaction_Date: Date of the patient's last interaction with the healthcare facility.
- Overall_Satisfaction: Overall satisfaction score provided by the patient.
- Wait_Time_Satisfaction: Satisfaction level related to waiting time.
- Staff_Satisfaction: Satisfaction level with hospital staff behaviour and support.
- Provider_Rating: Rating given to the healthcare provider or doctor.
- Avg_Out_Of_Pocket_Cost: Average amount paid by the patient from their own pocket.
- Billing_Issues: Number of billing-related issues reported by the patient.
- Portal_Usage: Level of patient portal usage for appointments, reports, or communication.
- Referrals_Made: Number of referrals made by the patient to others.
- Distance_To_Facility_Miles: Distance between the patient's residence and the healthcare facility in miles.
- Churned: Indicates whether the patient has churned
- Churned_Status: Text representation of churn status (1 = Yes, 0 = No).
- Tenure_Months_Status: Categorisation of tenure (Low / Medium / High).
- Missed_Appointments_Status: Categorisation based on missed appointment frequency (Low / High).

Descriptive Analysis

This analysis describes the existing churn situation. A significant number of patients have churned from the service. Most churned patients belong to the low tenure category and have fewer visits. Lower satisfaction levels are commonly observed among churned patients.

Diagnostic Analysis

This analysis explains the reasons behind patient churn. New patients failed to develop long-term engagement with the service. Low visit frequency and poor overall and waiting-time satisfaction contributed significantly to patient churn.

Predictive Analysis

This analysis predicts future churn trends. If patient engagement and satisfaction levels are not improved, churn is likely to increase. New and low-tenure patients are at a higher risk of churning in the future.

Prescriptive Analysis

This analysis suggests actions to reduce churn. Improving patient engagement, reducing waiting time, and focusing on new patient retention can help lower churn. Regular follow-ups and service quality improvements are recommended.

Conclusion

The analysis highlights that tenure, visit frequency, and satisfaction levels are the key factors influencing patient churn. Addressing these factors can help healthcare organisations reduce churn and improve patient retention.