■ MediTrack: Data-Driven Insights for Diabetes Readmission

Author: SK

■ Introduction

Hospital readmissions are a major concern in healthcare systems. This project uses an open-source diabetes dataset to analyze patient readmission patterns, treatment variations, and contributing factors. The dataset contains over 100,000 patient encounters with attributes like age, gender, hospital ID, admission type, procedures, medications, and readmission status.

■ Objective

The primary goal of this project is to: - Identify which age groups face the highest risk of readmission. - Analyze the impact of demographics and treatments on hospital readmissions. - Provide data-driven insights that can help healthcare providers reduce readmissions and improve patient outcomes.

■■ Methods

- Data Cleaning: Removed missing values (`?`), standardized categorical fields, and dropped unnecessary columns. - SQL Analysis: MySQL was used to query the dataset and answer business questions. - Visualization: Results were visualized in Excel for easy interpretation.

■ Business Questions & Findings

Q1. Which age group has the highest hospital readmissions? ■ Insight: Middle-aged and senior groups (50–80) show the highest readmission rates. Q2. Which gender shows higher readmissions? ■ Insight: Female patients had slightly higher readmission rates compared to males. Q3. Which hospital encounters the most readmissions? ■ Insight: A small number of hospitals account for the majority of readmissions, possibly due to higher patient loads. Q4. What admission type is linked with the most readmissions? ■ Insight: Emergency admissions had the highest probability of readmission. Q5. Which medical specialty shows the highest readmission rates? ■ Insight: Internal medicine and cardiology were the top specialties associated with readmissions.

■ Charts (Excel)

- Q1: Bar chart of Age Groups vs Readmission Counts - Q2: Pie chart of Gender vs Readmission % - Q3: Column chart of Top 10 Hospitals by Readmissions - Q4: Bar chart of Admission Type vs Readmissions - Q5: Column chart of Top 10 Specialties by Readmissions

■ Conclusion

- Middle-aged and elderly patients are most vulnerable to readmission. - Emergency admissions strongly correlate with readmission risk. - Specific specialties (Internal Medicine, Cardiology) require extra focus for patient follow-ups. ■ Hospitals can reduce readmission by: - Offering better discharge planning for high-risk groups. - Monitoring chronic conditions like diabetes more closely. - Strengthening follow-up care after emergency admissions.

■ Project by

SK