**Healthcare Analysis Using Tableau**

**Objective:**

The primary goal of this project is to leverage the capabilities of Tableau to transform healthcare datasets into an insightful narrative. The focus is on data preparation, intelligent data modeling, and the strategic use of Tableau’s functions for in-depth analysis. The outcome is an interactive and intuitive dashboard that effectively communicates key findings, enabling stakeholders to optimize healthcare operations and improve performance.

**Data Sources:**

1. **HealthcareDataset1:**
   * **PatientID:** Unique identifier for each patient (Primary Key).
   * **PatientName:** Name of the patient.
   * **Age:** Age of the patient.
   * **Gender:** Gender of the patient.
   * **BloodType:** Blood type of the patient.
   * **Diagnosis:** Diagnosis provided.
   * **Treatment:** Treatment administered.
   * **AdmissionDate:** Date of patient admission.
   * **DischargeDate:** Date of patient discharge.
   * **TotalBill:** Total bill amount for the treatment.
   * **Full Prescription Details:** Comprehensive details including medication names, dosages, frequency, and duration.
2. **HealthcareDataset2:**
   * **PatientID:** Unique identifier for each patient (Foreign Key corresponding to HealthcareDataset1).
   * **Hospital:** Name of the hospital where the treatment was provided.
   * **DoctorName:** Name of the treating doctor.
   * **RoomNumber:** Assigned room number.
   * **DailyCost:** Daily cost of the patient’s treatment.
   * **TreatmentType:** Type of treatment provided.
   * **RecoveryRating:** Patient's recovery rating (out of 10).

**Tasks Performed:**

1. **Correlation Analysis between Stay Duration and Recovery Rating:**
   * Investigated the relationship between hospital stay duration and recovery ratings to identify significant correlations.
2. **Clustering for Patient Treatment Patterns:**
   * Applied clustering techniques to group patients based on treatment patterns and recovery outcomes.
3. **Advanced Calculations for Prescription Analysis:**
   * Analyzed ‘Full Prescription Details’ to identify the most commonly prescribed medications for each diagnosis.
4. **Hospital Efficiency Analysis:**
   * Measured hospital efficiency by analyzing average stay duration, recovery ratings, and total bill amounts.
5. **Custom Date Parsing for Admission Trends:**
   * Parsed ‘AdmissionDate’ into day of the week and month to identify peak admission times.
6. **Dynamic Filters for Patient Demographics:**
   * Created dynamic filters to explore data based on patient demographics such as age, gender, and blood type.
7. **Time-Series Forecasting for Hospital Admissions:**
   * Utilized Tableau’s forecasting features to predict hospital admissions over the next six months based on ‘AdmissionDate’ trends and diagnoses.

**Dashboards Crafted:**

1. **Comprehensive Healthcare Dashboard**
   * **Dashboard Name:** TB Healthcare Dashboard
2. **Hospital Performance Comparison Dashboard**
   * **Dashboard Name:** TB Hospital Comparison Performance Dashboard
3. **Time-Based Analysis Dashboard**
   * **Dashboard Name:** TB Healthcare Trend Dashboard
4. **Treatment Effectiveness Analysis Dashboard**
   * **Dashboard Name:** TB Treatment Effectiveness Dashboard

**Key Insights:**

* **Patient Demographics:** Over three years, there were 337 female patients, 329 male patients, and 334 patients of other genders.
* **Recovery Trends:** Recovery ratings for diabetes patients have been improving over the years.
* **Forecasting Admissions:** Time-series forecasting projected the number of patients for each diagnosis in the upcoming months.
* **Doctor Performance:** Dr. David Moore treated the highest number of patients.
* **Cost Analysis:** Cedar Senai Clinic is the most expensive hospital, followed by Green Valley Medical Center. Silver Oak Medical Plaza is the least expensive.
* **Hospital Ratings:** Maple Groove Health Facility has the highest overall recovery rating.
* **Specialty Performance:** For diabetes, Dr. Elizabeth Davis at Cedar Senai Clinic has the highest recovery rating.
* **Treatment Trends:** The number of patients opting for mental therapy as a treatment type has been increasing over the years.

**Conclusion:**

This project demonstrates the power of Tableau in performing a comprehensive analysis of healthcare data. The resulting interactive dashboards reveal crucial insights into patient demographics, treatment patterns, hospital efficiency, and more. These insights provide stakeholders with valuable, data-driven knowledge for enhancing healthcare operations and improving patient outcomes.