**Hospital Emergency Room Analysis Dashboard**

**Project Overview**

This project focuses on creating a comprehensive **Hospital Emergency Room Analysis Dashboard** to provide actionable insights for hospital management. The primary goal is to improve efficiency, optimize patient flow, and enhance the overall quality of service. The dashboard visualizes key performance indicators (KPIs) and patient data to help stakeholders monitor, analyze, and make data-driven decisions.

**Problem Statement**

Hospitals often struggle with managing patient flow efficiently in emergency rooms. Without a clear overview of key metrics, it's difficult to identify bottlenecks, measure performance, and allocate resources effectively. This project addresses these challenges by consolidating critical data into a single, interactive dashboard.

**Key Objectives**

* **Monitor Patient Flow:** Track the total number of patients visiting the ER on a daily basis.
* **Analyze Service Efficiency:** Calculate and monitor the average wait time for patients to be seen by a medical professional.
* **Measure Service Quality:** Assess patient satisfaction scores to gauge the quality of care.
* **Identify Trends and Patterns:** Use visual elements like sparklines to spot busy days, seasonal trends, and drops in performance.
* **Provide Demographic Insights:** Analyze patient data by age, gender, and department referrals to better understand the patient population.

**Technical Stack**

This project was built using the following tools within Microsoft Excel:

* **Power Query:** Used for data connection, extraction, transformation, and loading (ETL). This included:
  + Connecting to the raw data source.
  + Cleaning and preparing the data (handling missing values, correcting data types, etc.).
  + Ensuring data quality and integrity.
  + Creating a robust **Calendar Table** to enable time-based analysis.
* **Power Pivot:** Used for building a professional data model. Key functions included:
  + Establishing relationships between different tables (e.g., patient data and the calendar table).
  + Creating a centralized data model for efficient analysis.
* **Data Analysis Expressions (DAX):** Used to create custom measures and calculated columns for the KPIs and metrics. Examples include:
  + Total Patients = COUNT(‘Patients’[PatientID])
  + Average Wait Time = AVERAGE(‘Patients’[WaitTime])
  + Percentage Seen Within 30 Mins = DIVIDE(COUNTROWS(FILTER(‘Patients’, ‘Patients’[WaitTime] <= 30)), COUNTROWS(‘Patients’))
* **Pivot Tables & Charts:** Used to create the final visualizations and interactive dashboard. This involved:
  + Summarizing data into **Pivot Tables** for key metrics.
  + Designing charts (donut charts, bar charts, line charts) to represent the data visually.
  + Arranging all components into a clear and intuitive dashboard layout.

**Dashboard Features**

The final dashboard provides insights into:

* **Overall KPIs:** Number of Patients, Average Wait Time, and Patient Satisfaction Score.
* **Patient Demographics:** A breakdown by gender and age groups.
* **Admission Status:** A comparison of patients admitted vs. not admitted.
* **Performance Metrics:** Percentage of patients attended to within 30 minutes.
* **Departmental Analysis:** A view of the most frequent department referrals.

**Project Outcome**

This project successfully demonstrates the power of Excel's BI tools to transform raw data into a dynamic and highly functional dashboard. It showcases my ability to manage a data analytics project from start to finish, including data cleaning, modeling, and visualization. The final product is a valuable asset for any hospital looking to gain a competitive edge through data-driven operational improvements.