

Hospital Insights Dashboard

1. Project Overview

The Hospital Insights Dashboard is a data visualization and analytics solution built using Microsoft Power BI. It provides an interactive interface to monitor key performance indicators (KPIs) of a hospital including patient admissions, doctor performance, departmental workloads, and treatment statistics.

2. Data Model Summary

a. Tables and Relationships

Table Name	Description	Primary Key	Foreign Key Relationships
Admissions	Patient admission records	AdmissionID	Links to Patients, Doctors, Departments
Patients	Patient demographic information	PatientID	Linked from Admissions, Visits
Doctors	Information about doctors	DoctorID	Linked from Admissions, Treatments
Departments	Hospital departments	DepartmentID	Linked from Doctors, Admissions
Visits	Detailed visit/treatment records	VisitID	References PatientID, DoctorID

KeysUsed:

- Primary Keys: PatientID, DoctorID, DepartmentID, VisitID, AdmissionID
- Foreign Keys: These are used to link fact tables like Admissions and Visits to the relevant dimensions.

3. Techniques Used

a. Data Modeling

- Star Schema Design: Fact tables (Admissions, Visits) at the center, surrounded by dimension tables.
- Relationships: One-to-many (1:*) relationships maintained using unique keys.
- Data Types: Proper classification of numeric, date, and categorical fields.

b. Data Transformation (Power Query Editor)

- Removed duplicates and nulls.
- Converted data types for consistency.
- Created new calculated columns for metrics such as patient status, duration of stay, etc.
- Applied filters for date ranges and department categories.

c. DAX Calculations

- Measures created for dynamic analysis:
 - Total Admissions = `COUNT(Admissions[AdmissionID])`
 - Active Patients = `CALCULATE(COUNT(PatientID), FILTER(...))`
 - Average Stay Duration = `AVERAGE(Admissions[StayDays])`
- Time Intelligence:
 - YTD Admissions, Monthly Trends, Previous Month Comparison

d. Visualizations

- KPI Cards for Total Admissions, Active Patients, and Average Duration
- Line Charts showing monthly admission trends
- Bar and Column Charts comparing department-wise workloads
- Donut Charts for patient status (Admitted, Discharged)
- Slicers for interactive filtering (Department, Doctor, Date)
- Drill-through Pages to explore patient-level or department-level insights

4. Insights Provided

- Trend Analysis: Monthly/Quarterly admissions and discharges.
- Department Analysis: Workload distribution and performance.
- Doctor-wise Performance: Number of patients treated, success rates.

- Patient Demographics: Age, gender, and condition-based segmentation.
- Operational Efficiency: Average duration of stay and resource utilization.

DASHBOARD VISUALIZATION



5. Conclusion

The Hospital Insights Dashboard successfully demonstrates the power of data-driven healthcare decision-making. By using Power BI's robust modeling, DAX, and visualization capabilities, the dashboard delivers actionable insights that improve hospital administration, patient care, and resource optimization.