Hospital Intelligence Dashboard

A professional, end-to-end analytics solution that turns raw hospital data into crystal-clear insights.
Built with **Power BI** (front-end), **SQL** (data mart), and **DAX** (business logic), the dashboard lets clinicians and administrators track quality of care, operational efficiency, and financial health in real-time.

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Project Overview

Objective: Build a single, unified dashboard that consolidates patient, clinical, inventory, and financial data—enabling faster, data-driven decisions and improved patient outcomes.

Highlights

- Real-time SQL refresh for up-to-the-minute KPIs
- Intuitive slicers & bookmarks & pagination & Web URL for rapid filtering
- Gauge, line, clustered/stacked bar and column chart, donut chart, metrics, tables, card (new),button silcer (new),list silcer (new) & 100% stacked column visuals - Drill-through into individual patients, doctors, surgeries, and SKUs(Stock Keeping Unit->SKUs typically refer to unique inventory items, especially medicines, medical equipment, or consumables.)

Technology Stack

Layer	Tools / Frameworks	Purpose
Data	SQL Server	ETL, views, stored procs
Modeling	Power BI Data Model, DAX	Business logic & calculations
Visualization	Power BI Desktop / Service	Interactive dashboards
Version Control	Git + GitHub	Source management & CI tracking

Screenshots

Page	Image
Home	Home
Overview	Overview
Patient	Patient
Doctor	Doctor
Surgery	Surgery
Finance	Finance

Page-by-Page Feature Guide

Home Page

Section	Description
Hero Banner	A bold welcome message: *"Transforming Healthcare Data into Actionable Insights"* with a subtitle that introduces the dashboard's role in streamlining hospital analytics.
Real-Time Monitoring KPIs	Central live metrics covering **Patients**, **Treatments**, **Billing**, **Medicines**, **Beds**, **Staff**, **Appointments**, **Admissions**, and **Discharges**—powered by real-time SQL updates.
Page Navigation	Transparent button-style navigation for quick access to: **Overview**, **Patient**, **Doctor**, **Surgery**, and **Finance** pages.
Interactive Tiles	Clickable, icon-based tiles that intuitively guide users to detailed analytical views.
Footer (Credits)	Developed by **Vyomesh Katariya** – GitHub Profile »

Overview Page

Feature / Control	Description
Global KPI Cards	Real-time counts for **Doctors**, **Patients**, **Staff**, and **Bills**.
Bed & Medicine Dual Donut (Button-Driven)	A transparent button labeled **"Medicine / Bed Chart"** toggles a pair of donut charts: • **Bed Availability %** (Available vs Occupied) • **Medicine Pricing Mix** (Cost vs Selling Price).
Real-Time Medicine Purchase Metrics	Dynamic metrics showing **daily** and **monthly** quantities of medicines purchased by patients, refreshed via DirectQuery.
Upcoming Appointments (Button Slicer "New")	A button-style slicer filters to **new / future appointments**, instantly updating all related visuals.
Patient Charges Type	**Stacked column chart** breaking down charges (consultation, surgery, pharmacy, etc.) by patient type or department.

Feature / Control	Description
Admissions vs Discharges	**Stacked bar chart** comparing counts of **Admission** and **Discharge** patients for the selected date range.
Discharge KPIs	• **% Discharged** card (ratio of discharged to admitted patients). • **Admission Count** and **Discharge Count** cards for absolute numbers.
Operational Trend Line	**Line chart** showing **monthly admissions** across the fiscal year, highlighting peaks and troughs.
Resource Snapshot	Heat-map / table of active staff, available doctors, and resource utilization in real time.
Interactive Filters	Slicers for **Month**, **Department**, and **Doctor** ensure every visual reacts instantly to user selections.

Patient Page

A real-time, drill-through workspace that surfaces every key insight for an individual patient—clinical, financial, and experiential.

Section / Visual	Purpose & Behaviour
Edit Button (Bookmark Slicer)	**Top-left "Edit" button** reveals a button-style slicer listing all patient names. • Selecting a patient forces the page to re-filter ("force quit") and drives every dynamic title and visual on the page.
Dynamic Page Title	Automatically changes to **"Patient Overview – [Patient Name]"** once a patient is selected. When no patient is selected, it falls back to **"Global Patient Overview"**.
Patient Profile Cards	Personal details: Name · Age · Gender · Contact · Rating given to doctor (feedback).
Admission & Discharge Details	Cards show Admission Date, Discharge Date, and Length of Stay.
Medicine Tracking Metrics	Two metric cards—**Today's Quantity** and **Month-to-Date Quantity**—refresh via DirectQuery to reflect real-time purchases.
Medicine Quantity (Clustered Bar)	Displays, per medicine SKU, **quantity purchased by the selected patient**. Dynamic title: "Medicine Purchases by *[Patient Name]*".

Section / Visual	Purpose & Behaviour
Bill Charges (Clustered Bars ×2)	Two clustered bar charts break down the patient's **billable charges** by category (e.g., Consultation, Surgery, Pharmacy, Misc.). Separate views for absolute amount and % share.
Financial KPI Cards	**Total Bill Amount** and **Total Medicine Quantity** for the selected patient.
Real-Time Line Chart	Daily timeline of medicine purchases (day & month granularity) for live consumption monitoring.
Interactivity & Sync	• All visuals respond instantly to the edit-button slicer. • Dynamic text titles use `SELECTEDVALUE()` to embed the patient name. • Tooltips show additional context (doctor, time, SKU).

Note: Each visual can be set to **Sort → Count / Amount → Descending** for quick high-to-low analysis.

Doctor Page

A real-time workspace that unifies schedule, performance, and financial metrics for each doctor.

Section / Visual	Purpose & Behaviour
Edit Button (Bookmark Slicer)	**Top-left "Edit" button** triggers a bookmark that slides in a **button-style slicer** containing every doctor's **photo + name**.— Selecting a doctor instantly re-filters the page to that profile.
Dynamic Page Title	Automatically renders **"Doctor Dashboard – *[Doctor Name]*"** when a doctor is chosen; defaults to **"Overall Doctor Summary"** otherwise.
Doctor Profile Cards	**ID**, **Department**, **Years of Experience**, **Qualification**, **Joining Date**, and **Avg. Patient Rating** .
Appointment Slicer	Dedicated slicer lists each upcoming or historical **appointment** (Patient Name + Date/Time) with **status tags** (Scheduled / Completed) for rapid drill-in.
Financial Gauge	Gauge visual powered by real-time DAX: **Doctor Commission % vs. Estimated Patient Amount**.
Financial Cards (Live)	• **Doctor Commission %** • **Doctor Fees by Bill** • **Total Bill Amount** (all linked to the gauge for instant feedback).
Contextual Cards (Patient-Scoped)	When an individual patient is selected via the slicer: • **Doctor % Commission on Selected Patient Bill** • **Selected Patient Total Bill** • **Doctor Fees on Selected Patient Bill**.
Doctor Appointment Table	Image + details grid showing: Patient Photo	Name	Patient ID	Status	Diagnosis	Payment Status	Doctor Fees.
Performance KPIs	Cards for **Total Ap-

pointments, **Patients Treated**, **Total Revenue Generated**, **Estimated Commission Earned**. | | **Live Metrics (DirectQuery)** | SQL-driven cards recalculating fees, commissions, and bill totals every refresh cycle. |

> *Note:* **All dynamic titles use `SELECTEDVALUE()` DAX to reflect the active doctor name.**
> Combine the bookmark slicer with "Sync Slicers" in Power BI so the selected doctor context travels across related report pages.

Surgery Page

An interactive view that consolidates surgical appointments, resource utilisation, and financial details—dynamically filtered to any selected surgeon.

Section / Visual	Purpose & Behaviour
Edit Button (Bookmark Slicer)	**Top-left "Edit" button** reveals a button-style slicer containing every surgeon's **photo + name**. Selecting a surgeon instantly re-filters **all** visuals and cards on the page.
Dynamic Page & Visual Titles	All major titles use `SELECTEDVALUE()` DAX, e.g. **"Surgery Dashboard − *[Doctor Name]*"**. When no surgeon is chosen, titles fall back to a neutral label (e.g., "All Surgeons").
Surgery Appointment Snapshot (Cards)	Real-time count of **today's surgeries** and next **upcoming surgery time** for the selected doctor.
Doctor Appointment Table (Table 1)	Lists **Doctor Name · Patient Name · Reason · Note · Description · Surgery Appt. Date/Time · Status**. Driven by the bookmark slicer; shows only rows for the chosen surgeon.
Patient-Level Surgery Details (Table 2)	Displays **Patient Name · Patient ID · Bed ID · Room ID · Doctor ID · Reason · Note · Description · Payment Method · Surgery Fees · Discount · Final Fees · Appt. Date/Time · Status Image (Web URL)**—fully scoped to the selected surgeon.
Age Group Distribution	**Clustered Bar Chart** that groups patients into **Young (20–35)**, **Adult (36–59)**, **Senior (60+)** counts for the active doctor.

Section / Visual	Purpose & Behaviour
Bed Utilisation by Room Type	**100 % Stacked Column Chart** showing **Beds by Room Type** split by **Status (Available vs Occupied)** for quick capacity checks.
Staff Slicer (Dynamic)	A slicer for **Staff Name** that filters both tables and adjusts all card totals—ideal for team performance reviews.
Performance & Financial KPI Cards	Cards for **Total Surgeries**, **Total Surgical Revenue**, **Average Surgery Discount**, and **Avg. Length of Stay**—all reactive to surgeon and staff selections.

> *Note:* **Every dynamic title and subtitle leverages** `SELECTEDVALUE()` **DAX** to display the active doctor's name.

Finance Page

The **Finance Page** provides an interactive and real-time overview of the hospital's financial operations, including billing, stock, patient charges, and revenue trends.

> *Note:* All visuals in this page are fully **dynamic** and respond to: - **Month Slicer** (for tracking performance month-wise) - **Edit Button Bookmark − Medicine** (filters all data based on selected medicine)

Section / Visual	Purpose & Behaviour
Edit Button (Bookmark – Medicine)	Opens a dynamic button slicer listing **all medicine names**. Once selected, it filters the entire page to show medicine-specific insights.
Dynamic Titles	Every chart and section uses `SELECTEDVALUE()` in DAX to display the currently selected **month** or **medicine** in the title.
Month Slicer	Allows filtering all data on the page by a selected **billing month**, enabling clear month-over-month comparisons.
Real-Time Sales Tracking	**Line Chart** showing the **monthly trend** of medicines purchased by patients.
Financial Summary (Cards)	Cards show key metrics: **Total Bill Amount**, **Staff Salary**, **Bill Count**, **Patient Count**, **Doctor Count**, **Staff Count**.

Section / Visual	Purpose & Behaviour
Inventory KPIs (Cards)	Cards summarizing stock status: **Total Medicine Count**, **Reorder Count**, and **Total Stock Quantity**.
Stock vs Reorder Level	**Stacked Column Chart** compares the **available stock** vs. **reorder level** for each medicine, highlighting over- and under-stocked items.
Charge Type Distribution	**Stacked Column Chart** categorizes **patient charges** (Consultation, Medicine, Surgery, etc.) by type for cost analysis.
Admission vs. Discharge Trends	**Stacked Bar Chart** comparing **monthly admission and discharge counts**. Complemented with cards displaying: **Total Admitted**, **Total Discharged**, and **% Discharged**.
Upcoming Appointments (Slicer - New)	**Button slicer** to filter and view **upcoming appointment data** for patients dynamically.
Stock by Category	**Stacked Bar Chart** shows stock quantity per **medicine category**, useful for inventory planning and category-level decisions.
Monthly Admission Trend	**Line Chart** visualizing **monthly admission counts**, assisting in capacity and operational planning.

This page acts as the financial backbone of the dashboard, allowing admins and finance teams to monitor every essential metric in a single glance.

Key DAX Measures – Hospital Power BI Dashboard

This section outlines all important DAX measures used across pages of the hospital management dashboard. These help drive KPIs, track performance, and add dynamic behavior to visuals.

Medicine Metrics

#	Measure Name	Purpose
1	`Medicine Quantity`	Total quantity sold / dispensed
2	`Medicine Count`	Unique medicine types in stock

Doctor Metrics

#	Measure Name	Purpose
1	`Doctor Count`	Total active doctors
2	`Sum of Rating ( )`	Average star rating by doctor
3	`Doctor Commission %`	Commission percentage based on fees
4	`Estimate Doctor Commission`	Forecasted commission based on bill amount
5	`Doctor Status`	Status – Active or Inactive
6	`Dynamic Doctor Appointment`	Sliced appointment table
7	`Dynamic Doctor-Patient Appt.`	Patient list filtered by selected doctor

Billing & Financial Metrics

#	Measure Name	Purpose
1	`Total Bill Amount`	Overall billing (per patient/month)
2	`Max Amount`	Highest bill recorded
3	`Bill Count`	Number of invoices generated
4	`Total Fees by Patient`	Aggregated consultation/treatment fees per patient

Bed & Room Occupancy Metrics

#	Measure Name	Purpose
1	`Bed Occupied Target KPI`	Target = Previous Month + 5%
2	`Bed Occupied Selected Month`	Current month's occupancy
3	`Bed Occupied Trend`	Occupancy trend over time

Patient Metrics

#	Measure Name	Purpose
1	Patient Count	Unique patients
2	Total Admission	Patient admissions
3	Dynamic Surgery Appointment	Appointments filtered by selected surgeon

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Additional Metrics for Dynamic Pages

#	Measure Name	Purpose
1	Max Rate	Highest rating achieved
2	Staff Count	Total staff available

Key Metrics Tracked Across Pages

This dashboard tracks a comprehensive set of live and historical metrics to provide real-time operational visibility into hospital performance:

Metric	Description	Pages
Doctor Count	Total number of registered doctors.	Home, Overview, Finance
Patient Count	Total patients admitted or recorded in the hospital system.	Home, Overview, Patient, Finance
Staff Count	Total active staff members working in the hospital.	Home, Overview, Finance
Bill Count	Total number of bills generated.	Home, Overview, Finance
Medicine Count	Total distinct medicines in stock.	Overview, Finance
Total Stock Quantity	Current available stock of all medicines combined.	Finance
Reorder Count	Medicines that have reached or fallen below the reorder threshold.	Finance
Total Beds / Bed Availability %	Number and percentage of beds available vs. occupied.	Overview, Surgery
Total Appointments	Count of total scheduled or completed appointments.	Home, Overview, Doctor, Finance

Metric	Description	Pages
Upcoming Appointments	Appointments scheduled for the future.	Overview, Finance
Monthly Admissions Trend	Line chart showing how patient admissions vary month-over-month.	Overview, Finance
Discharge Count & % Discharged	Number and percentage of patients discharged.	Overview, Finance
Real-Time Medicine Purchases	Quantity of medicines purchased by patients (day-wise and month-wise).	Overview, Patient
Total Bill Amount (Per Patient/Doctor)	Overall billing per patient or generated via a particular doctor.	Patient, Doctor, Finance
Doctor Commission %	Commission earned by a doctor based on billed amount.	Doctor
Charges Breakdown by Type	Stacked column chart of Consultation, Pharmacy, Surgery, etc. charges.	Overview, Patient, Finance
Room Type vs Bed Status	Bed distribution by room category and availability status.	Surgery
Patient Age Distribution	Clustered bar chart to show patient demographics (Young, Adult, Senior).	Surgery
Appointment Summary Table	Patient-wise or doctor-wise detailed appointments and billing breakdowns.	Patient, Doctor, Surgery
Doctor Rating (Patient Feedback)	Patient-given rating to doctors based on satisfaction or behavior.	Patient, Doctor
Discount on Surgery Bills	Calculated discount and final surgery fees post-discount.	Surgery
Staff-wise Filtering & Performance	Filter visuals based on staff members to see related metrics and tables.	Surgery

Setup & Deployment

"'bash # 1. Clone the repository git clone https://github.com/vyomeshkatariya/hospital-intelligence-dashboard.git cd hospital-intelligence-dashboard

2. Open Power BI

- Load the .pbix file

- Set up your SQL connection (if required)

- Replace relative paths for images with Power BI Web URLs or base64-encoded images

3. Optional

- Publish to Power BI Service for auto-refresh setup

- Adjust bookmarks/slicers for user-specific roles