Hospital Insights Dashboard

Title: 🚑 Hospital Patient Management Dashboard (Excel, Power BI, Tableau)

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Project Overview

Purpose of the Report:

This project analyzes **hospital patient management data**, focusing on patient demographics, departmental loads, payment analysis, operational efficiency, and revenue tracking. The project demonstrates end-to-end data analytics workflows, transforming raw hospital data into actionable insights through interactive dashboards using **Excel, Power BI, and Tableau** for informed healthcare decision-making.

Dataset Summary

- **Source:** Simulated Hospital Patient and Billing Dataset

- **Number of Records:** ~5,000 patient orders

- **Number of Features:** 24

- **Key Columns:**
    - PatientID, Gender, DOB, AdmissionDate, DischargeDate, LengthOfStay
    - Department, Doctor, Diagnosis, PaymentMode, TotalBillAmount, AmountPaid, OutstandingAmount
    - FollowupRequired, NextFollowupDate, MedicationCount, LabTestsCount, ProcedureCount
- **Preprocessing:**
    - Cleaned null values in follow-up dates and payment data.
    - Ensured numerical data types for financial and count columns.
    - Derived calculated fields for follow-up status and patient age.

Objectives

✅ Track patient admissions across departments and over time.

✅ Analyze financial performance through revenue and outstanding collections.

✅ Examine gender distribution and payment method patterns.

✅ Provide interactive exploration to support hospital management decisions.

Tools Used

Tool	Purpose
Excel	Data cleaning, KPI card creation, pivot charts, dashboard layout.
Power BI	Interactive dashboards with drill-down analysis, slicers, and KPI tracking.
Tableau	Advanced visuals with map analysis, donut charts, and interactive filtering.

Key KPIs

✅ **Total Patients:** Total patients admitted in the selected period.

✅ **Total Revenue:** Sum of all payments received.

✅ **Total Amount Paid:** Total Amount Paid

✅ **Outstanding Amount:** Sum of pending payments.

✅ **Average Length of Stay:** Mean length of stay across patients.

Visuals Implemented

	Visual	Purpose
1.	Donut Chart	Track gender split among patients.
2.	Bar Chart	Analyze patient loads across departments.
3.	Bar Chart	Track payment dues by department.
4.	Pie Chart	Visualize payment mode preferences.
5.	Bar Chart	Monitor operational efficiency.
6.	Donut Chart	Determine follow-up needs of patients.
7.	Bar Chart	Analyze revenue contributions by payment modes.
8.	Scatter Chart	Explore treatment complexity.
9.	Line Chart	Track revenue trends by admission dates.
10.	KPI Cards	Display key hospital metrics at a glance.

Filters and Interactivity

✅ Department filter for detailed departmental analysis.
✅ Gender filter to view patterns by gender.
✅ Payment mode filter for payment method analysis.
✅ Date range slicer to analyze trends over specific time periods.
✅ Cross-filtering across visuals for interactive exploration.

Insights & Analysis

✅ **Departments with high patient loads** identified for resource planning.
✅ **Outstanding payments monitored** for effective cash flow management.
✅ **Payment modes tracked** to understand revenue patterns.
✅ **Length of stay trends analyzed** for operational efficiency improvements.
✅ **Revenue fluctuations monitored** across months for financial planning.
✅ **Follow-up needs quantified** to optimize patient tracking and care continuity.

<u>Recommendations</u>

✅ Allocate resources to high-load departments for efficiency.

✅ Prioritize follow-up and patient care tracking.

✅ Focus on payment collection strategies in high outstanding departments.

✅ Monitor payment modes for financial process optimization.

✅ Use revenue trends for better financial forecasting.

<u>Learnings & Skills Applied</u>

✅ Data cleaning and preparation for analysis.

✅ KPI tracking and pivot-based summaries in Excel.

✅ Advanced DAX calculations and slicers in Power BI.

✅ Interactive storytelling and advanced visuals in Tableau.

✅ Translating healthcare data into actionable insights.
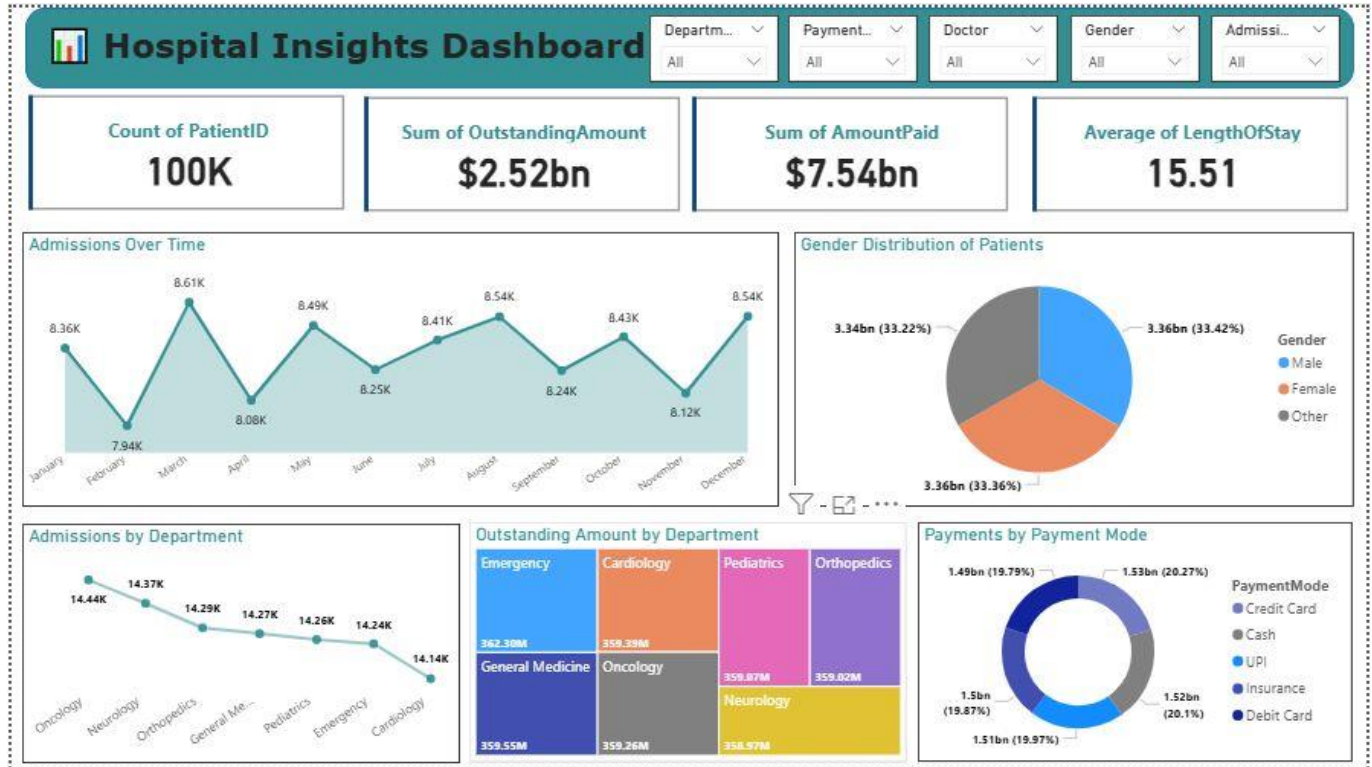
Dashboard Preview

❖ **Excel Dashboard**

- Displays KPI cards, bar charts, and pivot visuals for patient and payment analysis.
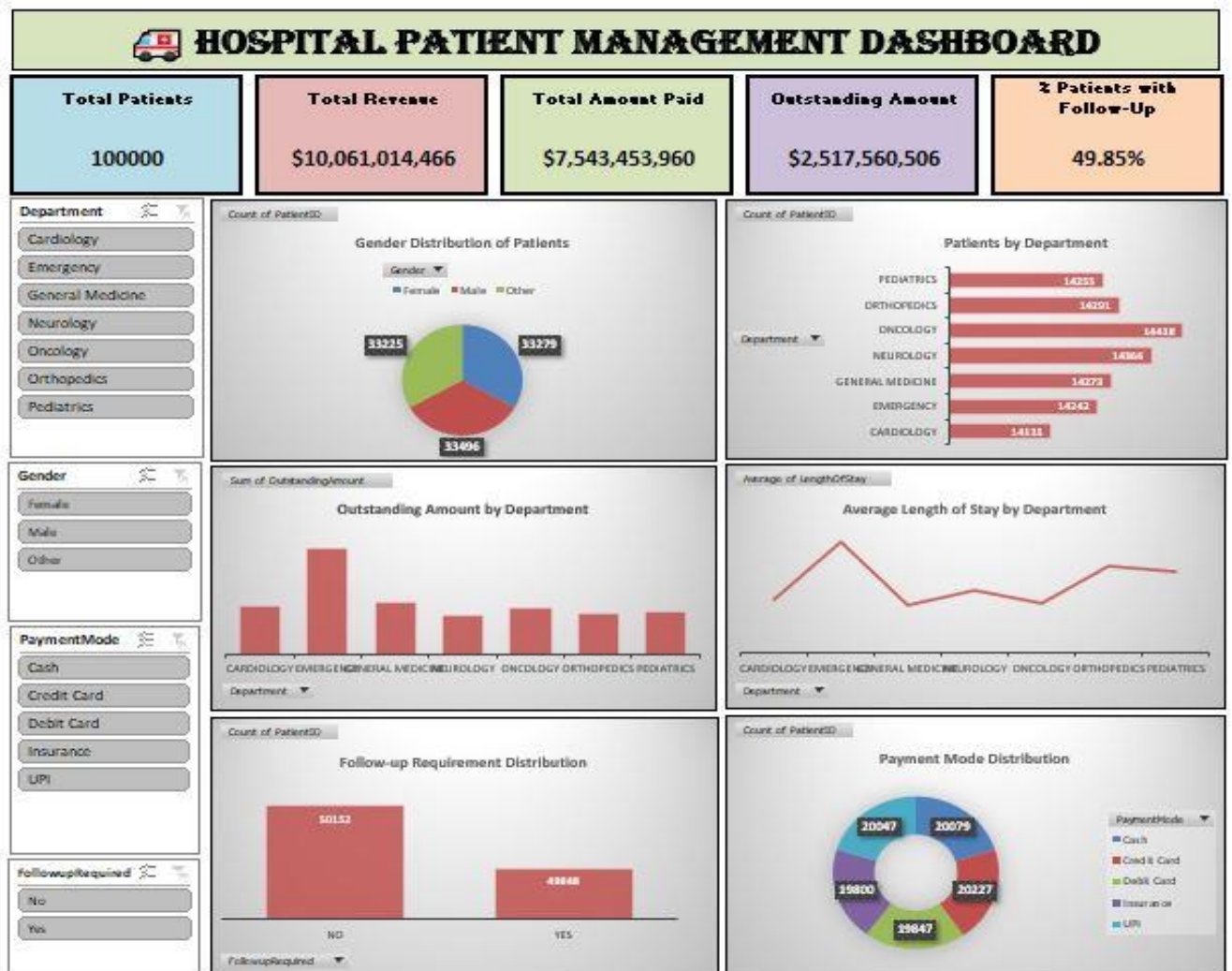
❖ Power BI Dashboard

• Interactive dashboards with slicers and drill-down visuals for comprehensive healthcare monitoring.

❖ Tableau Dashboard

• Clean, story-driven visuals with advanced filtering for operational and revenue insights.