Hospital Operations Analytics Dashboard

User Requirements Document (URD)

1. Business Objective

The primary objective of the Hospital Operations Analytics Dashboard is to provide hospital leadership and operations teams with a **single, interactive, and interpretable view** of operational performance across departments and hospital branches.

The dashboard should enable:

- Monitoring of real-time and historical hospital operations
- Identification of operational bottlenecks
- Data-driven short-term staffing decisions
- Long-term capacity and infrastructure planning
- Easy interpretation by **non-technical administrative users**

2. Stakeholders & User Personas

Primary Users

- Hospital Operations Managers
- Department Heads (Cardiology, Oncology, Orthopedics, Pediatrics, Emergency, General Medicine)
- Hospital Administrators
- Capacity Planning & Strategy Teams

Secondary Users

- Finance & Billing Teams
- Quality & Compliance Teams

3. High-Level User Requirements

UR-01: Operational Visibility

Users need a **centralized dashboard** to view hospital-wide and department-wise operational metrics related to patient flow, resource utilization, and outcomes.

UR-02: Performance Monitoring

Users need to **monitor key operational KPIs** on a daily, weekly, monthly, and quarterly basis to track efficiency and service quality.

UR-03: Bottleneck Identification

Users need the system to **highlight operational bottlenecks**, such as:

- Bed shortages during peak hours
- Delayed discharges
- Overloaded departments or doctors

UR-04: Predictive Planning

Users need **predictive insights** to anticipate upcoming resource needs (e.g., ICU beds, ventilators, staffing shortages).

UR-05: Comparative Analysis

Users need the ability to **compare performance**:

- Across departments
- Across hospital branches
- Across different time periods

UR-06: Executive Reporting

Users need **automated monthly performance summaries** for leadership review and compliance reporting.

4. Dashboard Functional Requirements

4.1 Key Performance Indicators (KPIs)

The dashboard shall display the following standardized KPIs:

- Average Length of Stay (ALOS)
- Bed Occupancy Rate (%)

- Total Patient Admissions
- Total Patient Discharges
- 30-Day Readmission Rate
- Procedure Volume (by department & type)
- Emergency vs Scheduled Case Ratio
- Doctor Utilization (% of time booked)
- Cost per Patient / Cost per Discharge
- Patient Outcome Classification:
    - Recovered
    - Improved
    - Transferred
    - Deceased

4.2 Analytics & Insights Requirements

The system shall support:

- Trend Analysis:
    - Daily
    - Weekly
    - Monthly
    - Quarterly
- Cross-Department Analysis:
    - Compare workload, outcomes, and utilization across departments
- Branch-Level Comparison:
    - Performance comparison between hospital branches
- Predictive Analytics:
    - Alerts for upcoming resource shortages (beds, ICU, ventilators)

    - Forecasted admission surges
- Bottleneck Analysis:
    - Identification of peak hours/days
    - Root-cause indicators (e.g., discharge delays causing bed unavailability)

5. Interactive Dashboard Requirements

5.1 Drill-Down Capabilities

Users should be able to drill down by:

- Department
- Time period
- Hospital branch
- Patient type (Emergency / Scheduled)
- Patient demographics:
    - Age group
    - Gender
    - Insurance type

5.2 Filters & Slicers

The dashboard shall provide filters for:

- Diagnosis category
- Procedure type
- Insurance type
- Department
- Branch
- Date range

6. Visualization & Usability Requirements

- All visualizations must be:
    - Simple
    - Intuitive
    - Interpretable by non-technical users
- Preferred visualization types:
    - KPI cards
    - Line charts for trends
    - Bar charts for department comparisons
    - Heatmaps for peak hours/days
    - Tables with conditional formatting
- Metrics should use **standardized definitions** across all departments and branches.

7. Reporting & Export Requirements

- Users must be able to generate:
    - Monthly operational reports
    - Department-wise summaries
- Supported export formats:
    - PDF
    - CSV
    - Excel

8. Data Requirements

8.1 Required Data Entities

The minimum dataset must include:

- Patient Demographics:
    - Age

    - Gender
    - Insurance Type
- Admission & Discharge Records
- Department & Procedure Codes
- Doctor & Staff Scheduling Data
- Billing & Resource Allocation Records
- Patient Outcome Records

8.2 Data Granularity

- Preferred granularity:
    - Hourly (for operational analysis)
    - Daily (minimum requirement)