Step-by-Step Project Document

1. Project overview — Describe the dashboard objective: analyze health performance metrics, patient trends, department efficiency, and cost insights using the uploaded healthcare dataset.

2. Files & inputs — List all source files (patients.csv, visits.csv, doctors.csv, lab_results.csv, expenses.csv, and the uploaded PBIX). Mention expected fields like Patient_ID, Visit_Date, Department, Doctor, Test_Name, Cost, Result_Value.

3. Set up workspace — Open Power BI Desktop and create a fresh report. Connect to all raw data sources and verify regional settings (date format, decimal separator).

4. Data import & schema validation — Load each table into Power BI and check column types. Convert data types (Date/Time, Decimal, Whole Number, Text) and remove unnecessary blank rows.

5. Data cleaning & transformation (Power Query) —
• Standardize patient and doctor names (remove extra spaces).
• Correct inconsistent department names (e.g., "Cardio" vs "Cardiology").
• Fix missing dates or invalid numeric entries in cost/result fields.
• Extract Year, Month, Week from Visit_Date.

6. Create dimension tables — Build dimensions for Patients, Doctors, Departments, Dates, Test Types, and Cost Categories.

7. Create fact tables — Build fact tables: Visits (one per visit), LabResults (one per test), Billing/Expenses (costs per service), ensuring all have foreign keys to dimension tables.

8. Define relationships — In Model view, link Fact tables to Dimensions using one-to-many relationships. Mark the Date table as the official Date table.

9. Create calculated columns — Add transformations such as Age Group, Department Category, Test Result Status (Normal/Abnormal), Visit_Type (OP/IP).

10. Build essential DAX measures —
• KPIs: Total Patients, Total Visits, Total Tests, Total Revenue.
• Clinical metrics: Avg Test Value, Abnormal % Rate.
• Financial metrics: Cost per Patient, Monthly Spend, Revenue Trend.

11. Create time-intelligence measures — Setup YTD Visits, MTD Revenue, Rolling 7-day Visit Average, and YoY comparison.

12. Design KPI header — Add card visuals for core KPIs: Visits Today, Total Patients, Revenue This Month, Abnormal Tests %, and Avg Department Waiting Time.

13. Build visuals for department performance — Department-wise visits (bar chart), revenue (column chart), and abnormal test rate (%) using clustered visuals.

14. Patient trends visualizations — Line chart for daily/monthly visit trends, area chart for cumulative tests, and heatmap for weekday/hour visit density.

15. Doctor performance analysis — Table showing each doctor's patient count, test orders, average result severity, and revenue contribution.

16. Add interactive components — Add slicers: Date, Department, Doctor, Test Type, Patient Age Group. Enable drillthrough to patient-level detail page.

17. Finalize & publish — Add a clean theme, apply uniform formatting, create tooltip pages, check performance, and publish to Power BI Service with scheduled refresh.