Healthcare Provider Dashboard

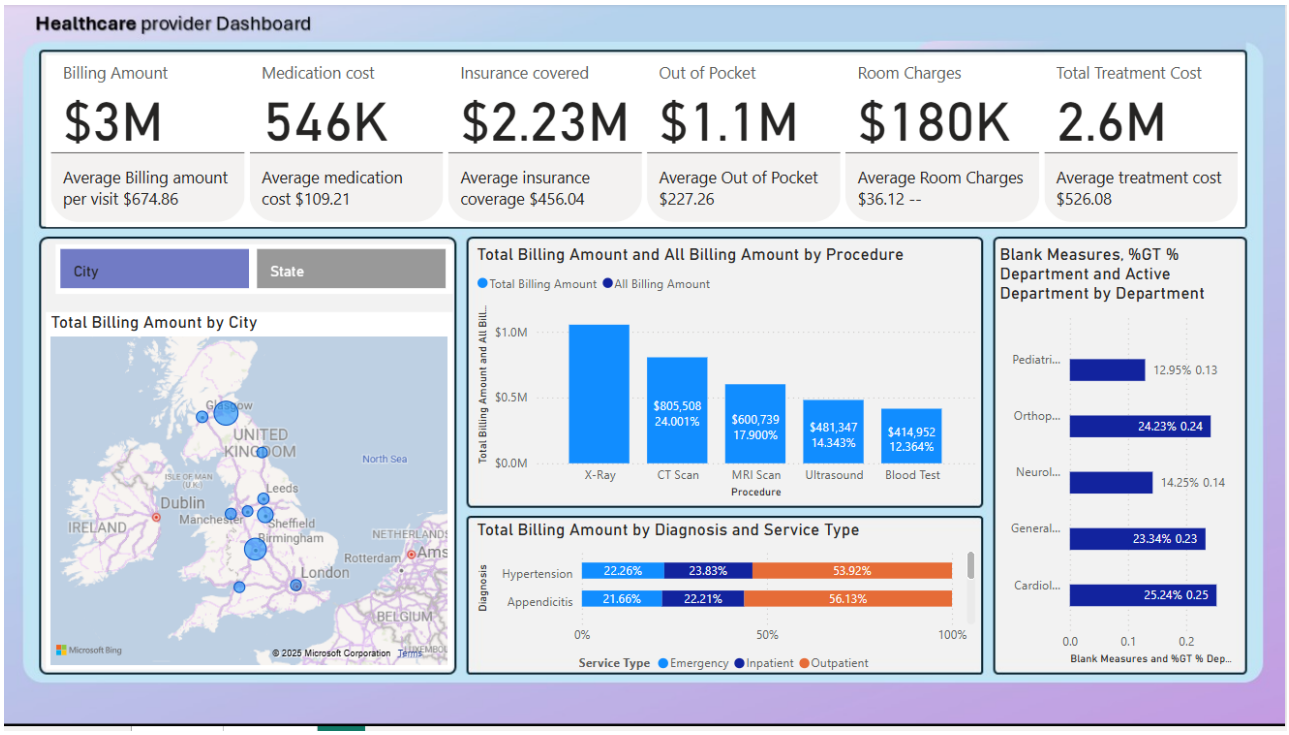
Creating a Dashboard in Power BI

Step 1: Connect to Data Sources

1. Open Power BI Desktop.
2. Click on **Home** > **Get Data**.
3. Select the appropriate data source (Excel, SQL Server, Azure, etc.).
4. Load the data into Power BI.

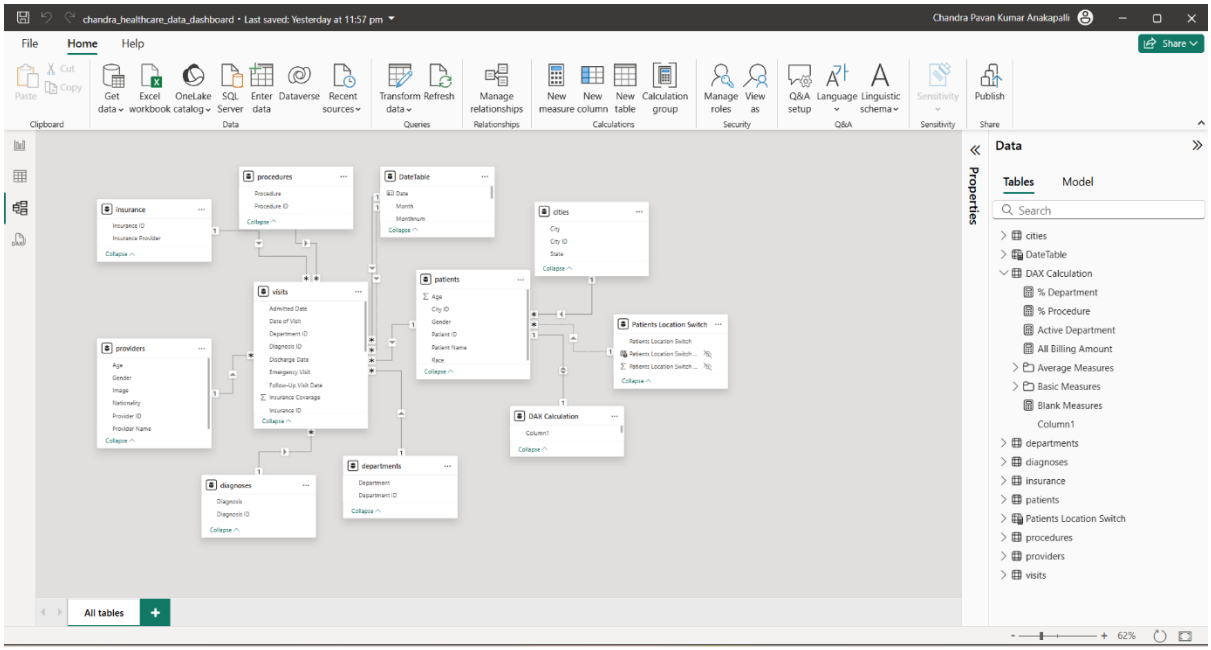
Step 2: Data Transformation and Cleaning

1. Open **Power Query Editor** (Transform Data).
2. Remove unnecessary columns.
3. Handle missing values (fill, replace, or remove them).
4. Format data types appropriately.
5. Create new calculated columns if needed.
6. Close & Apply changes.



Step 3: Data Modeling

1. Define relationships between tables using the **Model View**.
2. Set primary and foreign keys.
3. Use DAX (Data Analysis Expressions) to create calculated measures and columns.
4. Ensure that relationships follow a star schema to optimize performance.



Description of Data Model

The provided Power BI data model consists of multiple tables connected through relationships. Below is a description of the key tables and their roles:

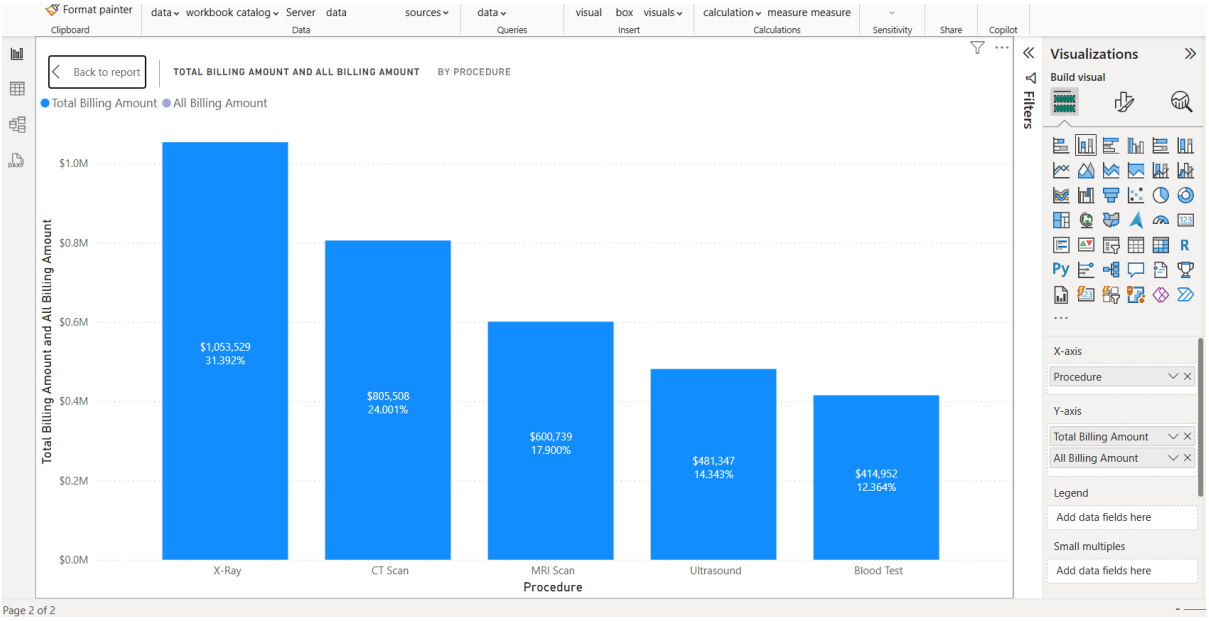
- **Patients**: Contains demographic details such as Age, Gender, Race, City ID, and Patient ID.
- **Visits**: Tracks patient visits with details like Admission Date, Diagnosis ID, Insurance ID, and Follow-Up Visit Date.
- **Providers**: Stores healthcare provider details including Provider ID, Name, Age, Gender, and Nationality.
- **Procedures**: Includes information on medical procedures performed, with a Procedure ID.
- **Diagnoses**: Holds medical diagnosis details, linked through Diagnosis ID.
- **Insurance**: Lists insurance providers and corresponding Insurance IDs.
- **Departments**: Contains information on hospital departments, identified by Department ID.
- **Cities**: Stores location data for patients with City and State details.
- **DateTable**: A standard date table to support time-based analysis.
- **DAX Calculation**: Placeholder table for custom calculations using DAX.

- **Patients Location Switch**: Likely used for dynamic filtering or switching between patient locations.

This model follows a star schema where the **Visits** table acts as the central fact table, while the other tables serve as dimensions.

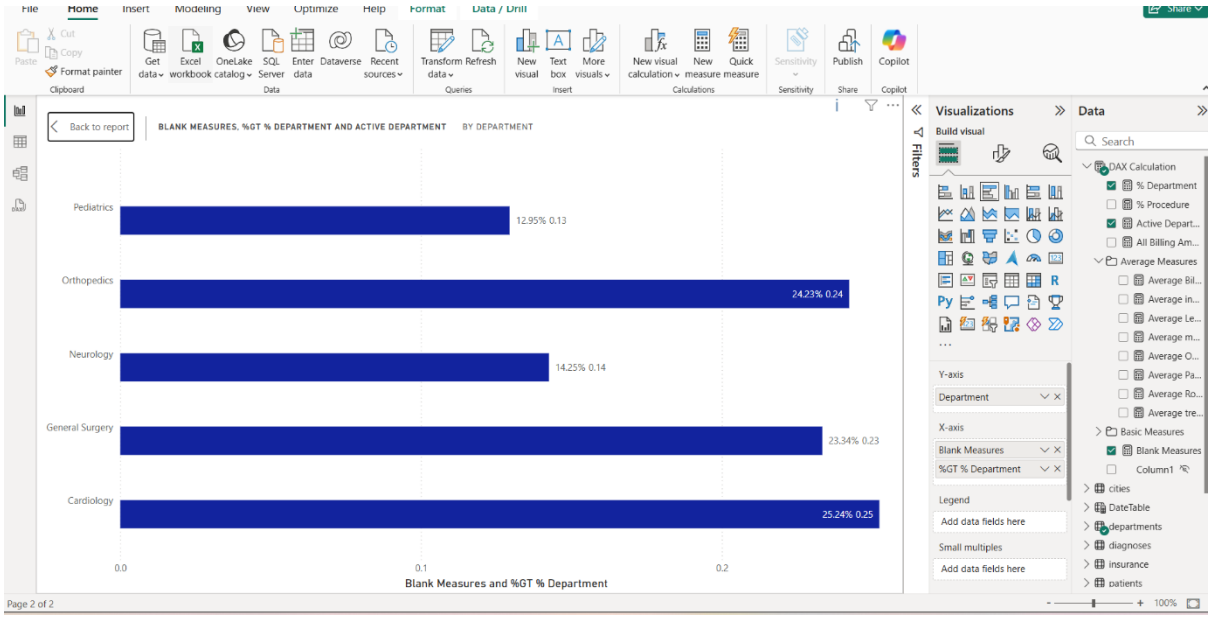
Step 4: Building Visualizations

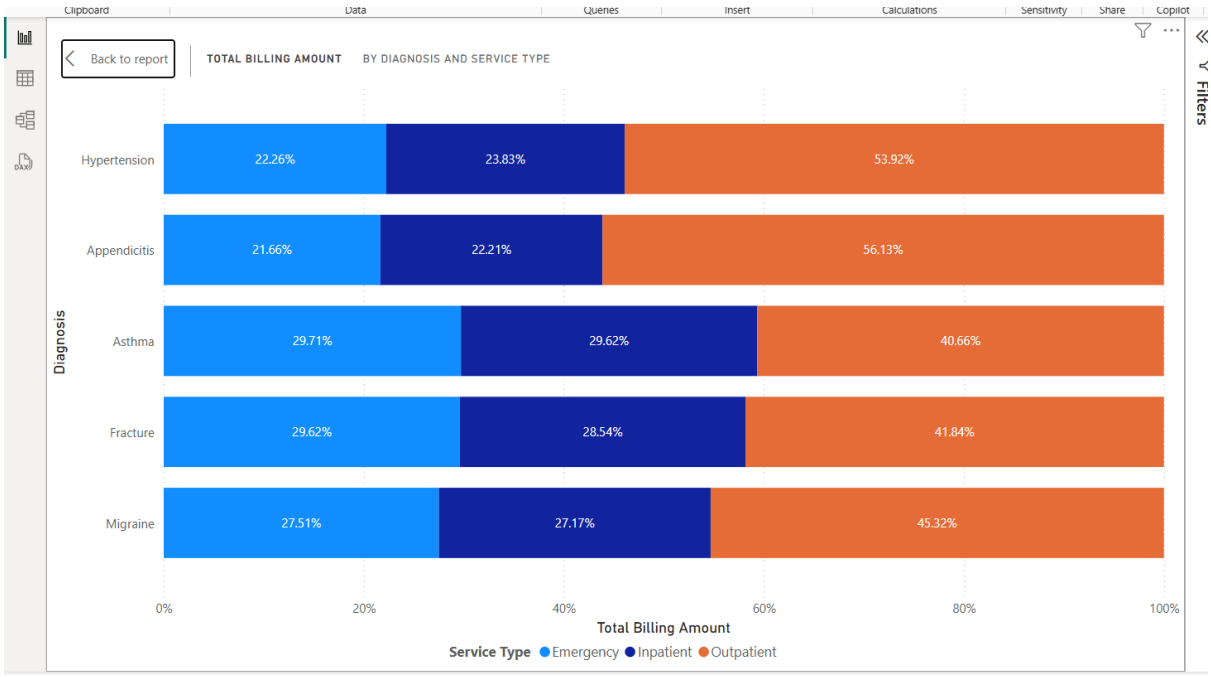
1. Go to **Report View**.
2. Select visualization types (Bar chart, Pie chart, Table, Card, etc.).
3. Drag and drop fields onto the visualizations.
4. Apply formatting (titles, colors, data labels).



Step 5: Creating Filters and Slicers

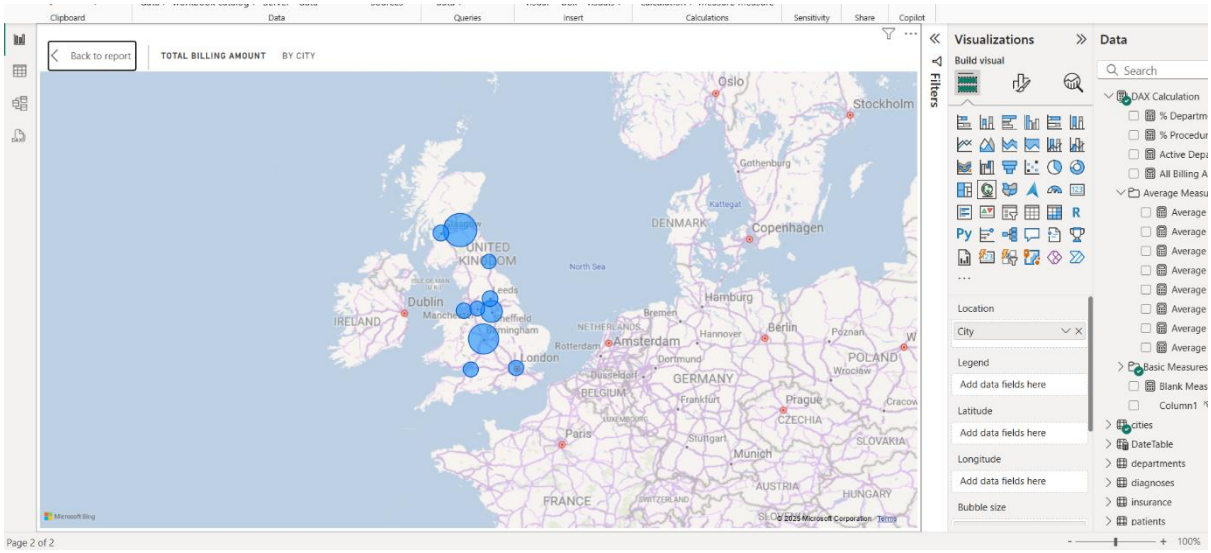
1. Add slicers to allow users to filter data interactively.
2. Apply filters at visual, page, or report level.
3. Use drill-through to create detailed views.





Step 6: Enhancing the Dashboard

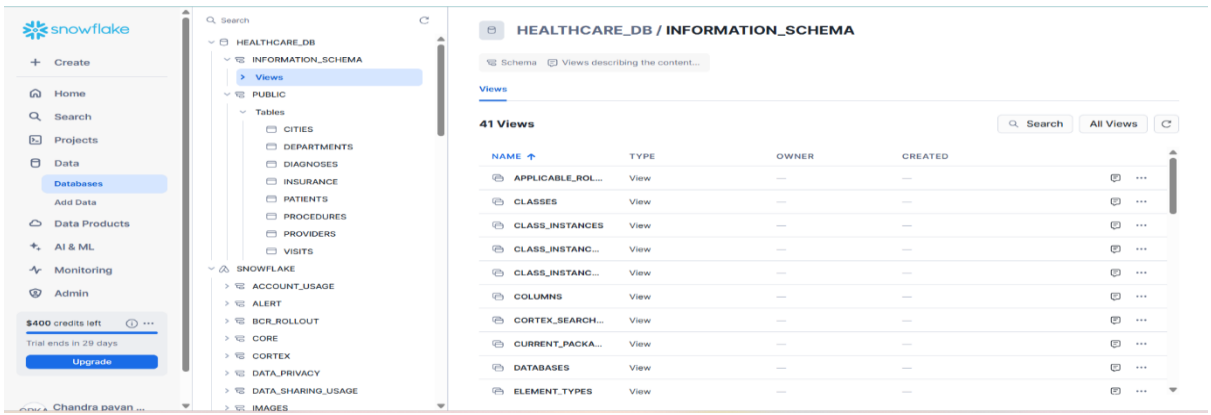
1. Add KPIs and conditional formatting.
2. Use bookmarks to create navigation.
3. Set up tooltips for better insights.



Description of Healthcare Provider Dashboard

The healthcare provider dashboard visualizes key financial and operational metrics using various Power BI visualizations:

- **Key Metrics Cards:** Displays total billing amount ($3M), medication cost (546K), insurance coverage ($2.23M), out-of-pocket expenses ($1.1M), room charges ($180K), and total treatment cost ($2.6M), along with average values for better insight.
- **Billing Amount by City (Map Visualization):** Uses a geographic map to visualize the distribution of total billing across different cities, providing insights into regional trends.
- **Billing Amount by Procedure (Bar Chart):** Breaks down the total billing amount across different medical procedures (X-ray, CT scan, MRI scan, etc.), helping in cost analysis.
- **Billing Amount by Diagnosis and Service Type (Stacked Bar Chart):** Categorizes billing by diagnosis (e.g., Hypertension, Appendicitis) and service type (Emergency, Inpatient, Outpatient), showing variations in medical costs.
- **Departmental Blank Measures (%GT by Active Departments):** Displays department-wise distribution of an unspecified measure, which might help in identifying gaps in department performance or resource allocation.



Implementing Snowflake for Healthcare Data Analytics

Step 1: Setting Up Snowflake Environment

1. Create a Snowflake account and set up a virtual warehouse.
2. Configure roles and access control for security.
3. Establish connections with on-premise or cloud data sources.

Step 2: Loading Data into Snowflake

1. Use **Snowflake UI** or **SnowSQL** to upload datasets.
2. Integrate with **AWS S3, Azure Blob, or GCS** for bulk data loading.
3. Perform data ingestion using **COPY INTO** statements.

Step 3: Data Modeling in Snowflake

1. Implement a **star schema** to optimize analytical queries.
2. Define **fact** and **dimension** tables.
3. Use **materialized views** for performance optimization.

Step 4: Querying and Processing Data

1. Write **SQL queries** to extract meaningful insights.
2. Use **Snowpark for Python** to perform advanced data transformations.
3. Leverage **time travel and cloning** for historical data analysis.

Step 5: Connecting Snowflake to Power BI

1. Install the **Snowflake ODBC driver**.
2. Connect to Snowflake from **Power BI using DirectQuery or Import mode**.
3. Optimize query performance by using **result caching and clustering keys**.

Step 6: Building Dashboards with Snowflake Data

1. Import Snowflake datasets into Power BI.
2. Create visualizations based on healthcare metrics (patient visits, billing, insurance claims, etc.).
3. Set up scheduled refresh to keep data up-to-date.

This integration of **Snowflake with Power BI** enables seamless analysis of large-scale healthcare data, ensuring high performance, security, and real-time insights for decision-making.