Healthcare Analytics Dashboard

Project Overview

The *Healthcare Analytics Dashboard* is an end-to-end data analytics project designed to provide actionable insights into healthcare performance metrics. It consolidates raw healthcare data, cleans and transforms it, and visualizes key performance indicators (KPIs) for better decision-making.

Key Objectives

- To identify patterns and trends in healthcare data.

- To monitor critical KPIs such as patient admission rates, treatment success rates, and resource utilization.

- To create a visually interactive and data-driven dashboard for decision-makers.

Data Workflow & Methodology

1. Data Cleaning & Preparation

Performed using a combination of **Python (Pandas, NumPy)**, **Power Query**, and **Power BI**:

- Removed duplicate and irrelevant records.

- Handled missing values with appropriate imputation techniques.

- Applied data type conversions for consistency.

- Standardized text fields and unified categorical labels.

- Filtered out outliers and invalid entries to ensure data quality.

2. Exploratory Data Analysis (EDA)

- Conducted EDA in **Python** to understand data distribution and correlations.

- Used **Matplotlib** and **Seaborn** for pattern detection.

- Generated summary statistics to identify key trends and anomalies.

3. ETL Process

- **Extract**: Pulled data from CSV/Excel files and healthcare databases.

- **Transform**: Applied filtering, grouping, calculated columns, and measure creation in **Power BI**.

- **Load**: Integrated cleaned and transformed data into the Power BI model for visualization.

Dashboard Features

- **KPIs**: Displays real-time metrics such as patient counts, average length of stay, and occupancy rates.

- **Interactive Filters**: Allows users to slice data by department, time period, and patient demographics.

- **Gauge & Card Visuals**: Highlights target vs. actual performance.

- **Trend Analysis**: Shows historical data for key indicators over time.

- **Resource Allocation Insights**: Tracks staff and equipment utilization.

Skills & Tools Applied

- **Data Cleaning & Transformation**: Python, Pandas, NumPy, Power Query.

- **Data Modeling & DAX**: Created calculated measures and columns in Power BI.

- **ETL Pipelines**: Designed and executed complete extract-transform-load processes.

- **Data Visualization**: Developed dynamic and interactive dashboards in Power BI.

- **Analytical Thinking**: Applied EDA for insight generation and problem-solving.

Impact

This dashboard enables healthcare administrators and decision-makers to:

- Identify operational bottlenecks.

- Allocate resources efficiently.

- Monitor performance targets in real-time.

- Make informed, data-driven decisions for improving patient care.