Hospital Patient Data Analysis & Treatment Insights System

Group Name:- Analytica
Member:-
Sylvester Gard
Nidhi Dhamnaskar
Srujan Gaikwad
Rohan Bhalerao

Title of the Project:-
Hospital Patient Data Analysis & Treatment Insights System

Name of the Group:-
Analytica

Technology used:-

- Python
- Power BI
- CSV Dataset

Introduction

Problem Statement:-

Hospitals generate large volumes of patient data daily. However, this data is often:-

- Unstructured
- Difficult to Analyze
- Not used effectively for decision-making

As a result, hospitals face challenges in:-

- Understanding patient trends
- Monitoring treatment costs
- Analyzing disease patterns
- Optimizing hospital resources

Introduction

Project Description

This project is a data analytics solutions that analyzes hospital patient data to generate meaningful insights.

The System

- Cleans raw healthcare data using Python
- Analyzes patient demographics, diseases, and costs
- Presents insights through an interactive Power BI dashboard
- The dashboard helps users understand hospital performance at a glance

Project Objectives

- Analyze patient demographics (age,gender)
- Study disease-wise patient distribution
- Monitor hospital admission trends over time
- Calculate average treatment cost and stay duration
- Provide interactive filtering for better decision-making
- Convert raw data into visual insights

Dataset Used:-

- Healthcare patient dataset (CSV format)
- Cleaned using Python

Contains information such as:-

- Patient ID
- Age
- Gender
- Disease
- Admission Date
- Discharge Date
- Treatment Cost
- Length Cost
- Data Preparation
- Missing values handles
- Duplicate records removed
- Date formats standardized
- Final Cleaned Dataset used for Power BI

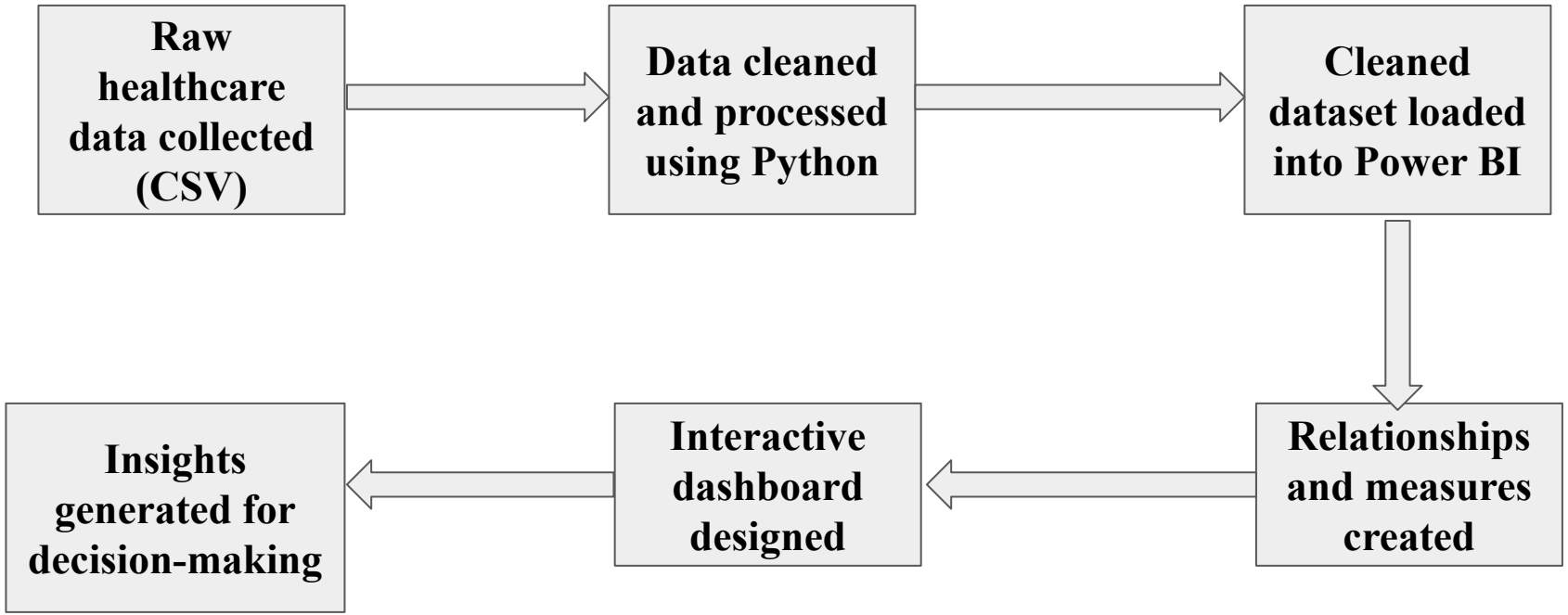
Technologies:-

- Python
- Pandas
- NumPy
- Seaborn
- Matplotlib

Used for Data Cleaning and Processing:-

- Power BI Desktop
- KPI Cards
- Bar Charts
- Donut Charts
- Line Charts
- Slicers & Filters
- CSV
- Dataset storage and transfer

Project Flow



Hospital Patient Analytics Dashboard:-

- The dashboard includes:
  - KPI Cards for quick insights
  - Interactive charts for detailed analysis
  - Filters and slicers for user-driven exploration

- **This dashboard is designed to be:**
  - Simple
  - Professional
  - Highly interactive

KPIs Displayed:-

- Total Patients
- Average Length of Stay (Days)
- Average Treatment Costs
- Average Patient Age

Purpose:-

These KPIs provide a high-level summary of hospital performance

Visuals Included:-

- Disease-wise Patient Distribution (Bar Chart)
- Gender Distribution (Donut Chart)
- Admission Trend Over Time (Line Chart)

Benefits:-

- Easy comparison
- Clear trend identification
- Better understanding of patient patterns

Interactive Elements:-

- Disease Slicer
- Gender Slicer
- Admission date range filter
- Discharge date range filter
- Age range slider
- Length of stay filter

Impact:-

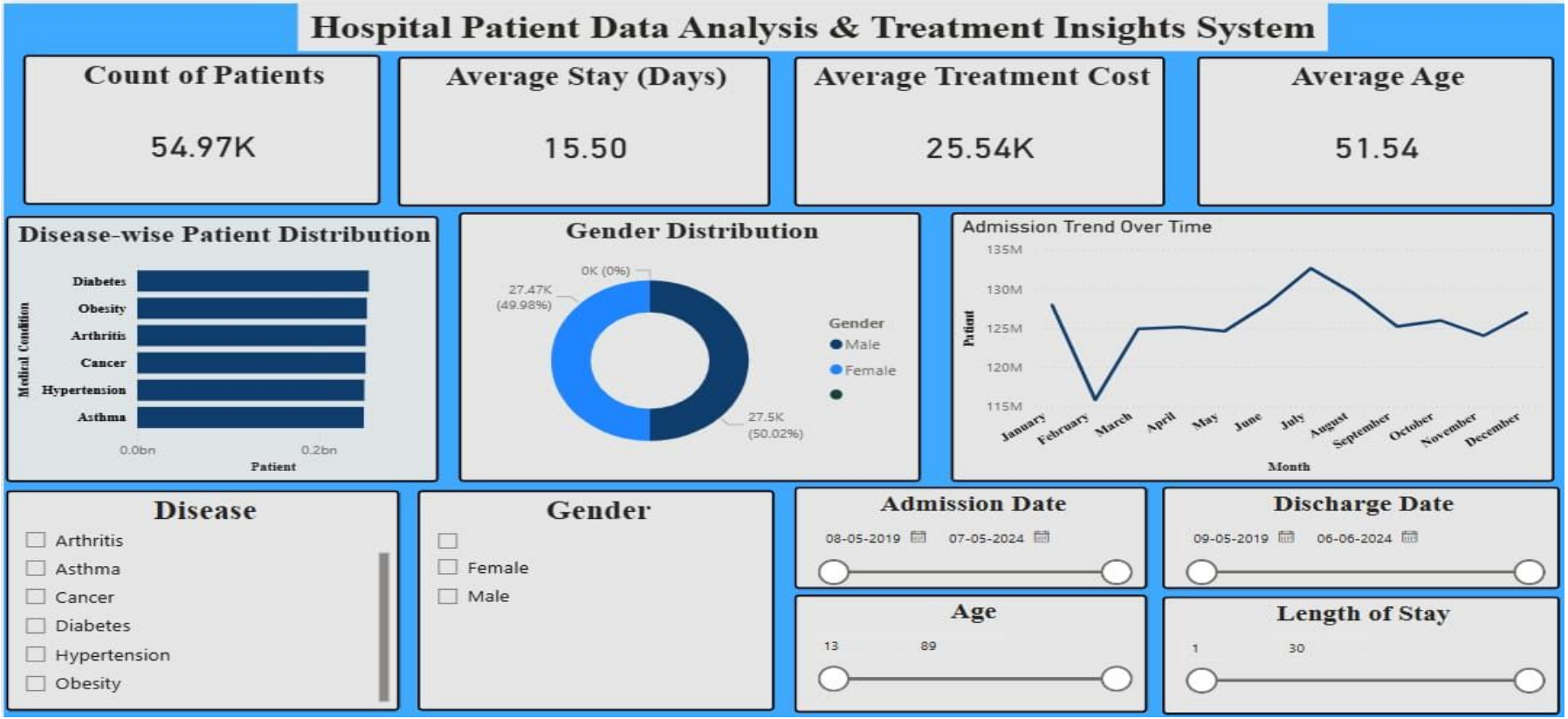
Users can dynamically explore data based on their requirements

Problems Solved:-

- Converts raw healthcare data into insights
- Helps hospitals identify high-demand diseases
- Assists in monitoring treatment costs
- Improves decision-making using visuals
- Saves time compared to manual analysis

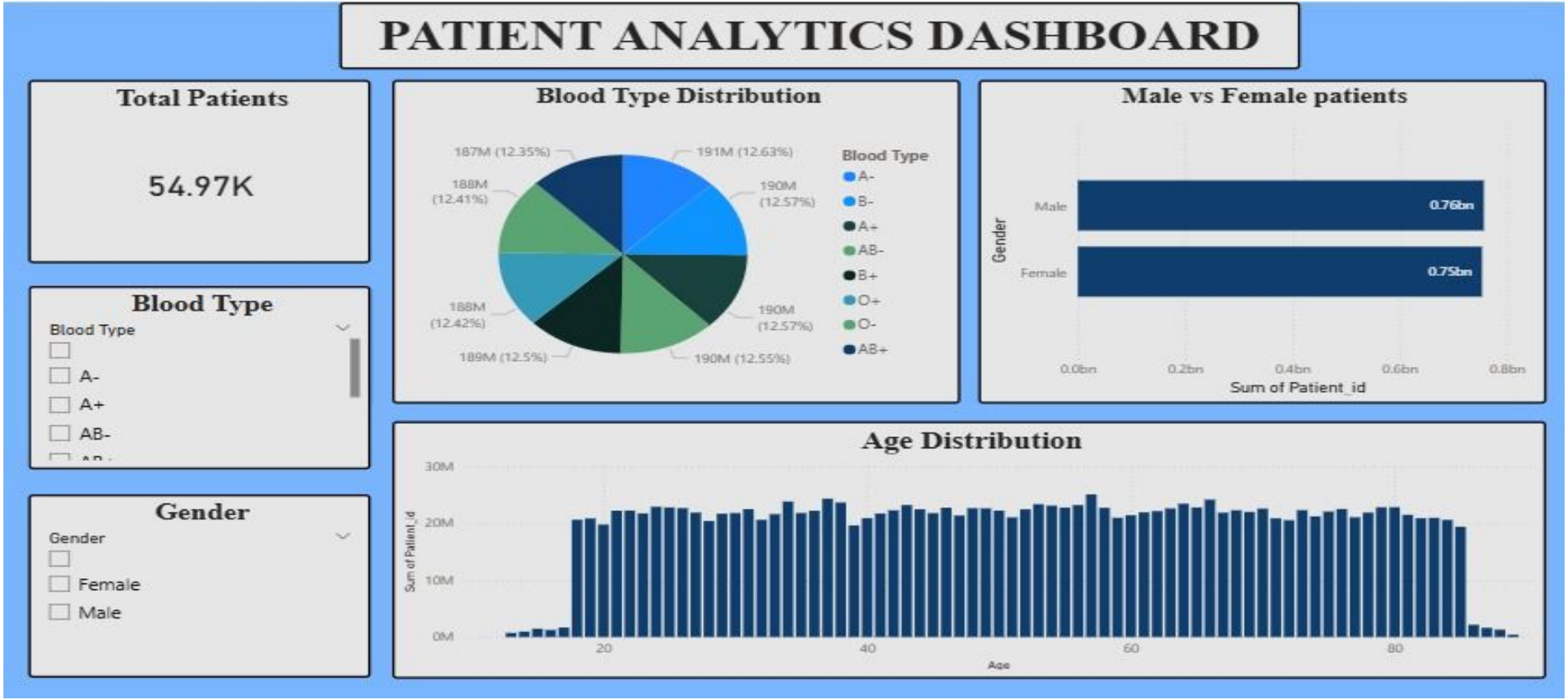
Screenshot

1. Overview



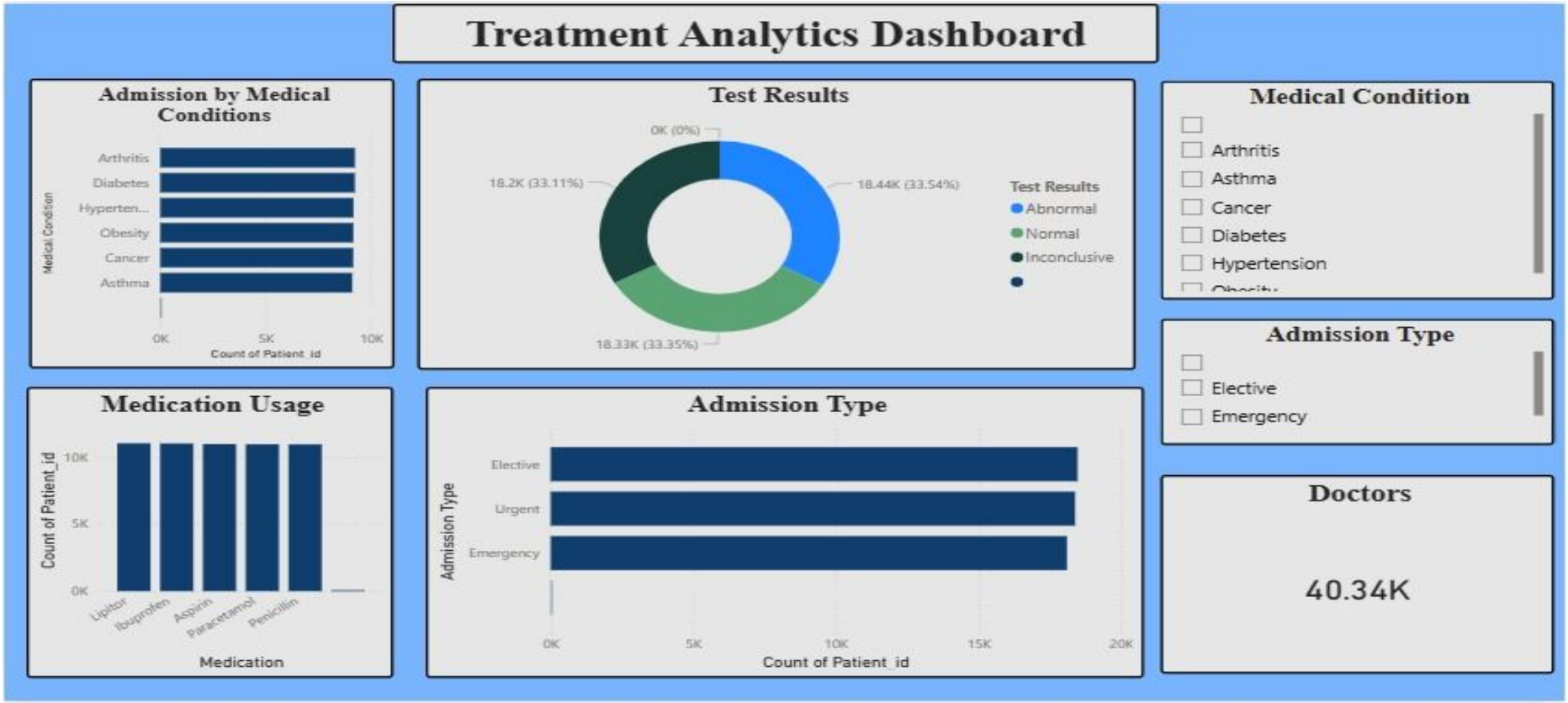
Screenshot

2. Patient Analytics Dashboard



Screenshot

3. Treatment Analytics Dashboard



Screenshot

4. Cost and Stay Analytics Dashboard

Advantages:-

- Easy to understand dashboard
- Interactive and user-friendly
- Reduces manual reporting effort
- Supports data-driven decisions
- Scalable for larger datasets

Future Enhancements:-

- Real-time data integration
- Predictive analytics using Machine Learning
- Role-based dashboards (Doctor/Admin)
- Integration with live hospital systems
- Deployment on Power BI Service

Conclusion:-
The Hospital Patient Data Analysis & Treatment Insights System successfully demonstrates how data analytics and visualization can improve healthcare decision-making.

The project effectively:-

- Analyzes patient data
- Generates actionable insights
- Uses professional Power BI features

Drive link for the project:-
https://drive.google.com/drive/folders/1Pz96TFs1zCCpXmzFt_ZvdIObsh9K3tP0?usp=drive_link

GitHub Link:-
https://github.com/sylvester2703/Hospital-Patient-Data-Analysis-and-Treatment-Insights

THANK YOU