

Report

Summary

This project analyzes healthcare data to understand patient demographics, treatment effectiveness, and hospital performance. The analysis reveals patterns in patient age groups, treatment success rates, and departmental efficiency, providing actionable insights to improve patient care quality and optimize hospital resources.

Tools Used

Python, Pandas, Matplotlib, Jupyter Notebook

Key Findings

- 1 Middle-aged patients represent the majority of hospital admissions.
- 2 Medication-based treatments show the highest success rate.
- 3 ICU departments have the highest bed occupancy and readmission rates.
- 4 Patient satisfaction is inversely related to readmission rate.

Dataset Overview

The analysis uses patient data, treatment data, and hospital metrics including demographics, treatment outcomes, costs, bed occupancy, readmission rates, and patient satisfaction scores.

Methodology

- 1 Data loading and cleaning using Pandas.
- 2 Exploratory data analysis (EDA).
- 3 Visualization of insights using Matplotlib.
- 4 Interpretation of trends and patterns.

Healthcare Impact & Recommendations

- 1 Optimize ICU resource allocation to reduce overcrowding.
- 2 Focus on preventive care to reduce readmission rates.
- 3 Monitor high-cost treatments for effectiveness.
- 4 Improve patient experience to increase satisfaction scores.

Limitations

- 1 Limited dataset size.
- 2 Simulated data, not real-world clinical data.
- 3 No predictive modeling included.

Conclusion

This project demonstrates how healthcare data analysis can support data-driven decisions, enhance patient-centric care, and improve hospital operational efficiency.

Future Enhancements

- 1 Predictive modeling for readmission risk.
- 2 Time-based trend analysis.
- 3 Real-time data integration.
- 4 Dashboard development using Power BI or Tableau.