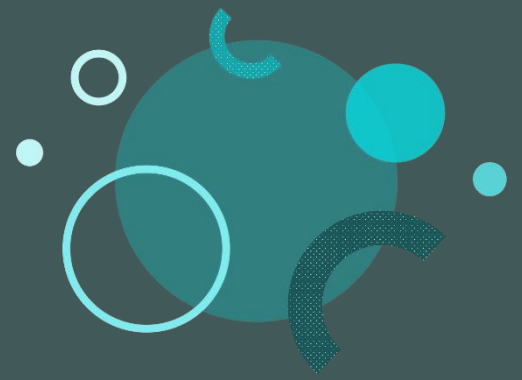
Leveraging SQL for Strategic Healthcare Insights

Hospital Data Analysis Project

Objective

Objective of the Project:

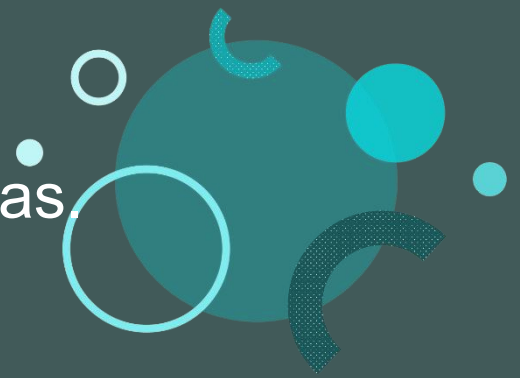
- To analyze hospital-related data using SQL queries.
- To extract meaningful insights that can assist in improving hospital performance and resource management.
- To help decision-makers understand patient flow, medical expenses, staff distribution, and department-wise performance.



? Problem Statement

The Challenges:

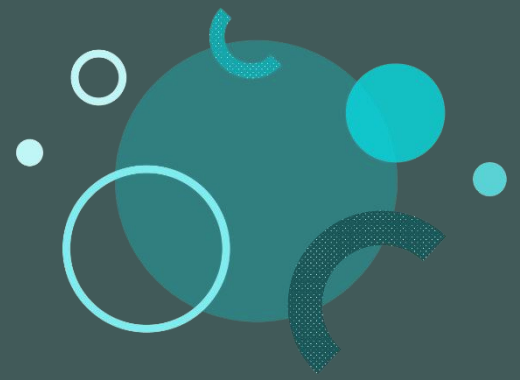
- Lack of visibility into patient trends across hospitals and departments.
- Difficulty in identifying high-cost or low-efficiency areas.
- Need for data-driven decision making to enhance healthcare services.
- Understanding utilization of resources like doctors and bed occupancy duration.



Dataset Overview

Hospital Table Contains:

- hospital_name: Name of the hospital
- location: City or region of the hospital
- department: Department within the hospital (e.g., Cardiology, Pediatrics)
- patients_count: Number of patients treated
- doctors_count: Number of doctors
- medical_expenses: Total expenses recorded
- admission_date, discharge_date: Date of patient admission and discharge



Total Number of Patients

Insight:

• Total number of patients treated across all hospitals was calculated.

• This helps to understand overall patient volume and load on the system.

✅ SQL Output Insight:

• Example: "Total Patients: 58,340"

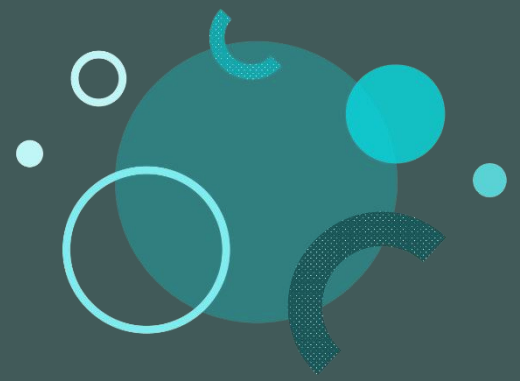
📈 Doctor Distribution

Insight:

- Average number of doctors available in each hospital.
- Helps in understanding manpower allocation.

🧠Use Case:

- Hospitals with lower average doctor count may need hiring or resource allocation.



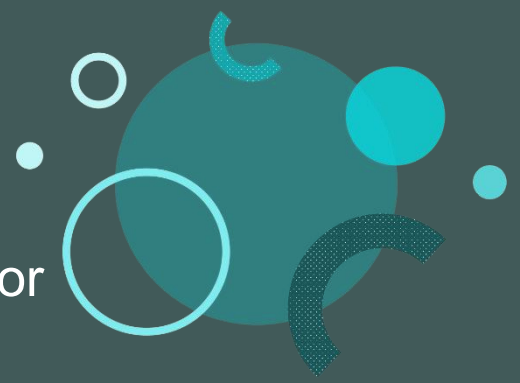
Top 3 Busiest Departments

Insight:

- Identified top 3 departments with highest patient counts.

🎯Why It Matters:

- Helps in prioritizing staff allocation, funding, and infrastructure for high-demand departments.



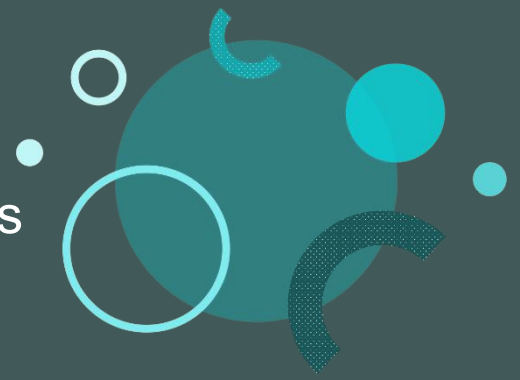
Highest Medical Expense Hospital

Insight:

• Found the hospital incurring the highest medical expenses.

Actionable Tip:

• Audit that hospital for inefficiencies or special treatment services driving the cost.



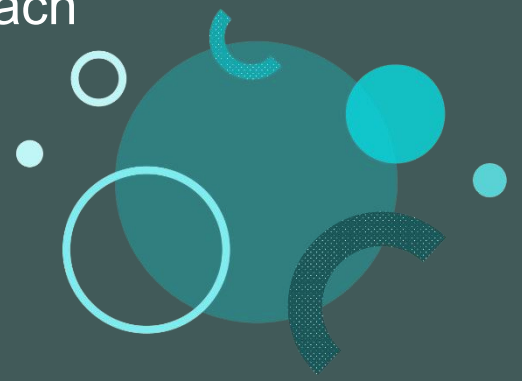
Daily Average Medical Expenses

Insight:

• Calculated daily average medical expense per patient stay in each hospital.

📌Why Important:

• To benchmark cost-efficiency between hospitals.



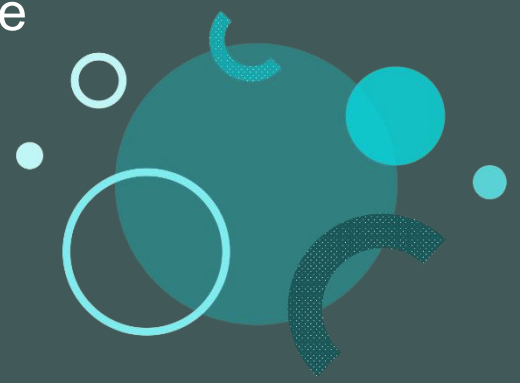
Longest Hospital Stay

Insight:

• Identified the hospital and department where patients stayed the longest.

⚕ Use Case:

•Check for chronic cases or slow recovery departments.



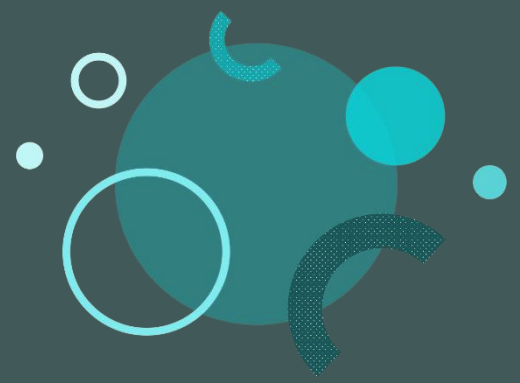
City-Wise Patient Treatment

Insight:

- Total number of patients treated per city.

🌍 Why This Helps:

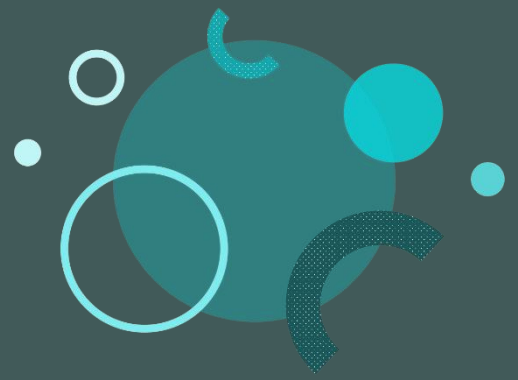
•Identify which cities have higher healthcare needs.



Average Length of Stay by Department

Insight:

•Departments with higher average stay durations may need operational review or special care tracking.



Least Busy Department

Insight:

Found the department with the least number of patients.

Recommendation:

Review if the department is underutilized or requires service upgrades.

📅 Monthly Medical Expense Trends

Insight:

Analyzed expenses month-wise to track peaks and dips.

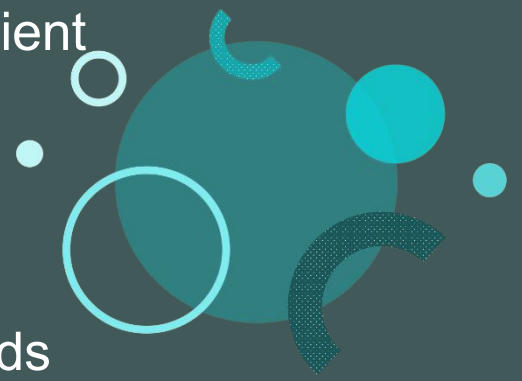
☑ Action Point:

Budget forecasting and cost trend analysis can be based on this data.

Key Insights Summary

Insight:

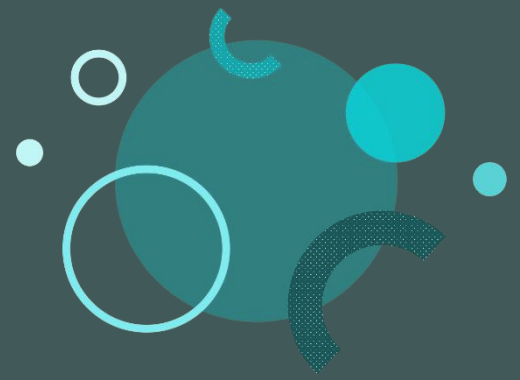
- ✓ Cardiology and Emergency departments have the highest patient load.
- ✓ City A and B are high patient-density zones.
- ✓ One hospital is incurring abnormally high medical costs—needs auditing.
- ✓ Some departments show longer stays—indicates critical care or operational inefficiencies.



🛠 Solutions & Recommendations

Insight:

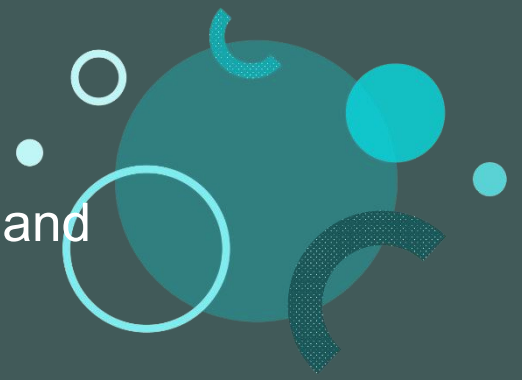
- ✓ Rebalance doctor distribution across hospitals.
- ✓ Investigate high-cost hospitals for process optimization.
- ✓ Boost support in high-load departments and cities.
- ✓ Consider reducing patient stay duration where possible to improve bed turnover.



Conclusion

Insight:

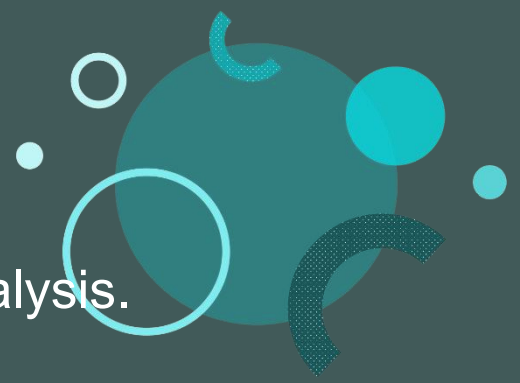
- ✓ Data-driven insights help in strategic planning and improving healthcare delivery.
- ✓ SQL-based analysis enables cost control, staff management, and improved patient care.
- ✓ Hospitals can utilize these insights for policy-making and operations improvements.



✓ Future Work

Insight:

- ✓ Predictive modeling for patient admission forecasting.
- ✓ Integrating real-time data for dynamic dashboards.
- ✓ Include patient satisfaction scores and outcomes in future analysis.



THANKS

Thanks a lot for your valuable time!