



A BI Capstone
project
on

HEALTHCARE ANALYTICS

EXCEL, POWER BI,
TABLEAU, MYSQL

- MALLIKA UPPUGANTI

AGENDA

- What is Healthcare?
- Why Analytics matter ?
- KPI List
- Excel Dashboard
- Power BI Dashboard
- Tableau Dashboard
- MySQL Queries
- Recommendations and Action Plan
- Conclusion

HEALTHCARE

What is Healthcare?

Healthcare refers to the organized provision of medical services to maintain or improve people's health. It includes services like diagnosis, treatment, prevention of diseases, and promotion of overall well-being through hospitals, clinics, doctors, nurses, and other health professionals.

Why Analytics matter?

Analytics matters in healthcare because it helps improve patient outcomes, reduce costs, and optimize operations. By analyzing data from patient records, treatments, and diagnostics, healthcare providers can:

- **Identify trends and risks early** (e.g., chronic disease patterns).
- **Make data-driven decisions** for better resource management.
- **Improve patient care quality** through personalized treatments.
- **Enhance operational efficiency** by monitoring workloads, costs, and follow-up rates.

KPI List

1. Total Patients
2. Total Doctors
3. Total Visits
4. Average Age of Patients
5. Top 5 Diagnosed Conditions
6. Follow-Up Rate
7. Treatment Cost Per Visit (Avg.)
8. Total Lab Tests Conducted
9. Percentage of Abnormal Lab Results
10. Doctor Workload (Avg. Patients Per Doctor)
11. Total Revenue



EXCEL DASHBOARD

HEALTHCARE ANALYTICS

TOTAL PATIENTS

10000

TOTAL DOCTORS

1000

TOTAL VISITS

10000

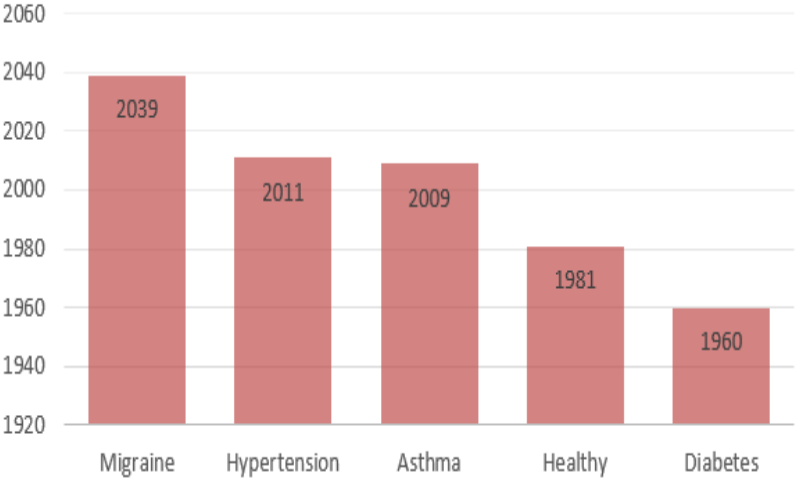
AVERAGE AGE OF PATIENTS

49

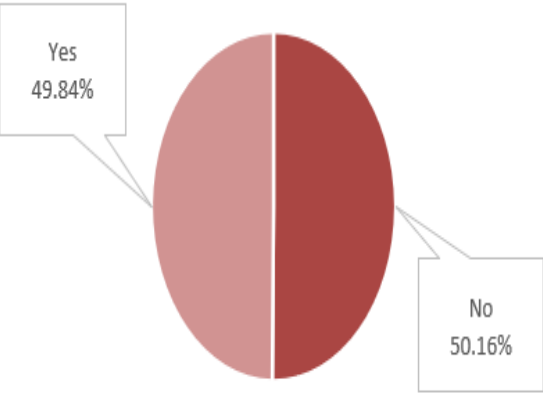
TOTAL REVENUE

\$52,47,455

TOP 5 DIAGNOSED CONDITIONS



FOLLOW UP RATE



Diagnosis

Asthma

Diabetes

Healthy

Hypertension

Migraine

City

Chicago

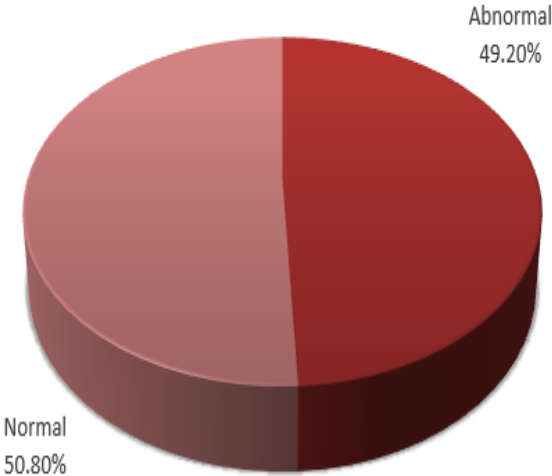
Houston

Los Angeles

Miami

New York City

LAB RESULTS



AVERAGE COST OF TREATMENT
PER VISIT

\$524.75

DOCTOR WORKLOAD

10

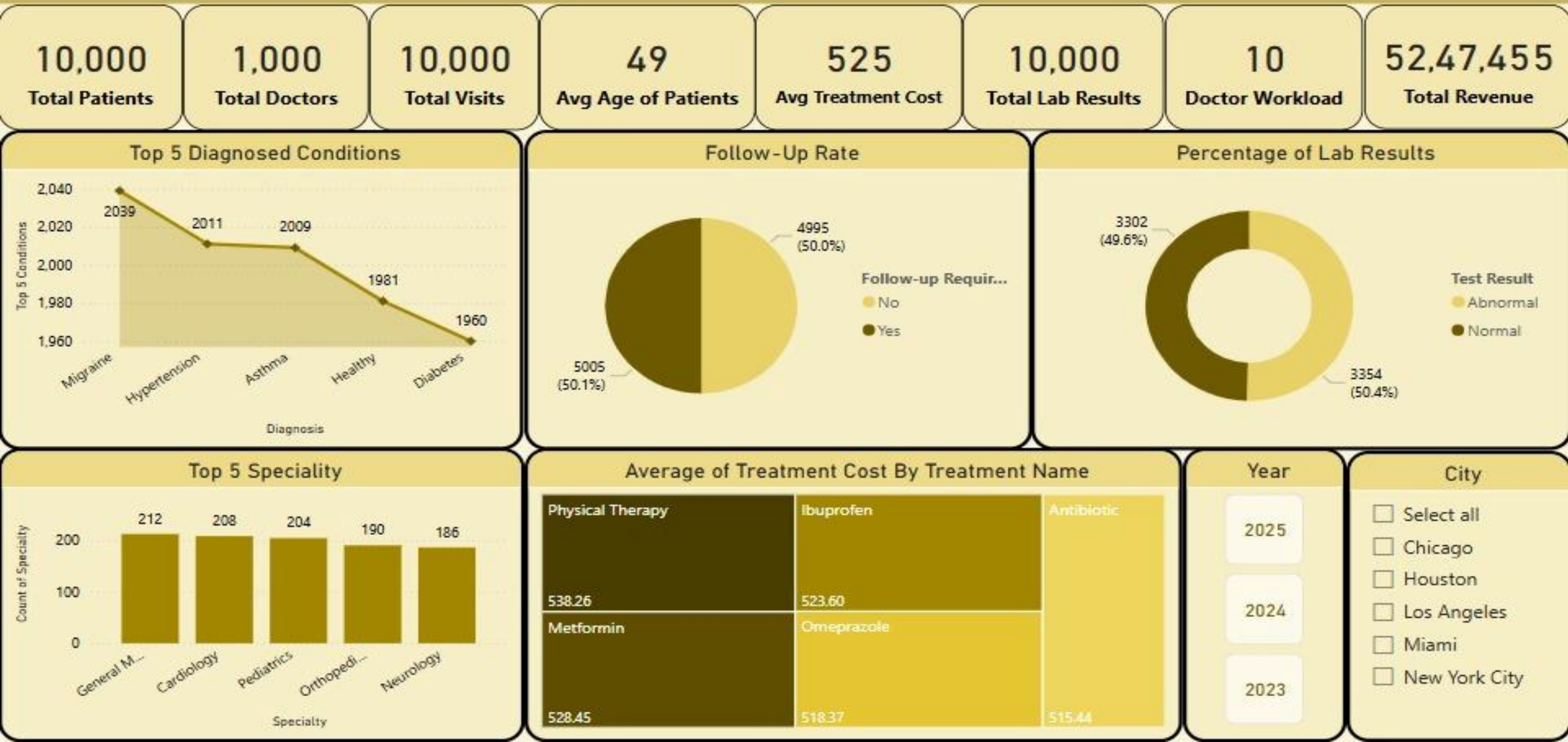
TOTAL LAB TESTS

10000



POWER BI DASHBOARD

Healthcare Analytics Dashboard



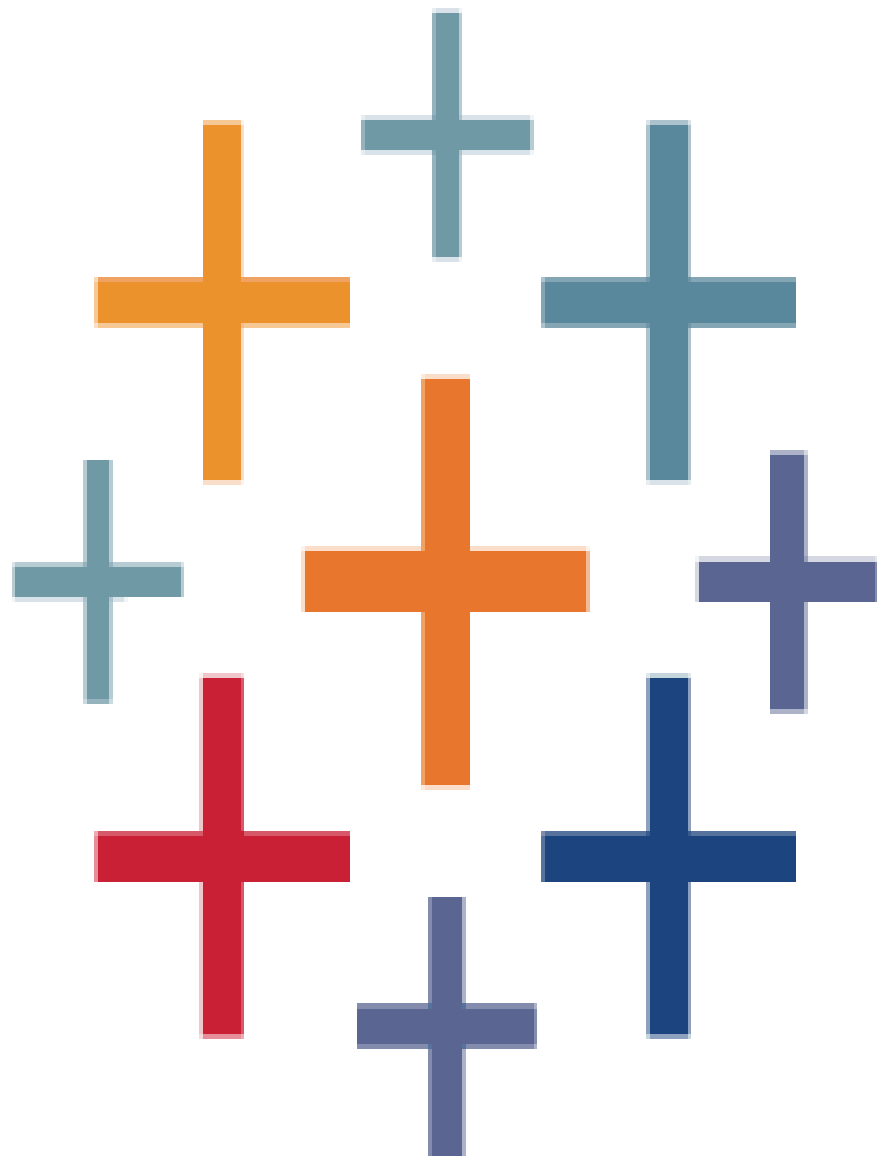
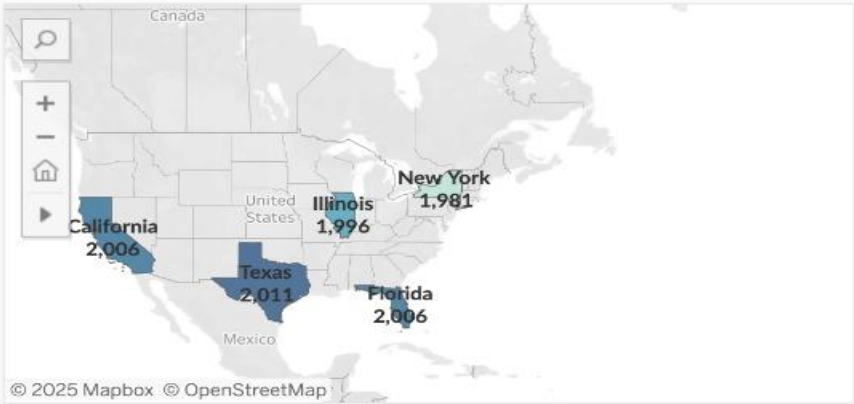


TABLEAU DASHBOARD

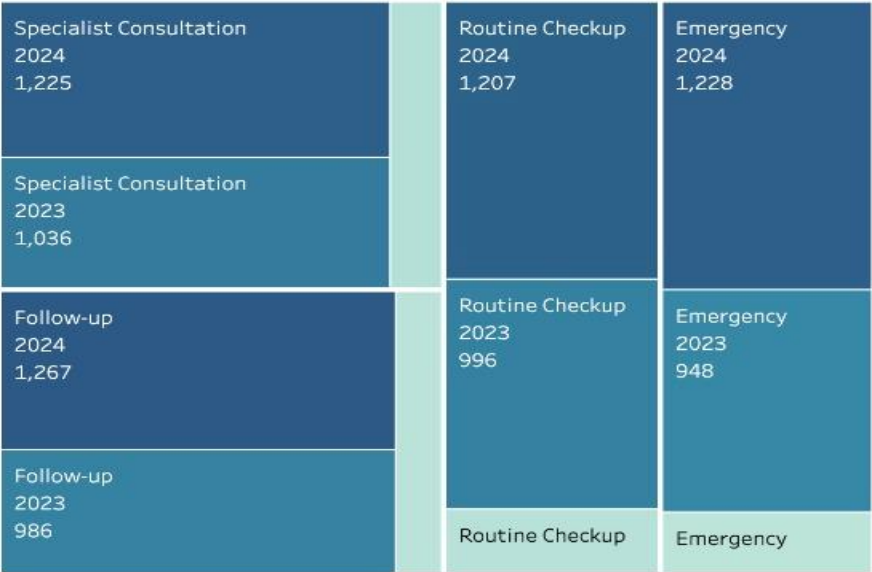


Healthcare Analytics Dashboard

Region Wise - Total Patients



Total Number of Visits



Count of Total Doctors

1,000

Average Age of Patients

48.94

Follow Up Rate

49.8%

Average Treatment Cost
per Visit

\$524.75

Percentage of Abnormal Lab
Results

33.54%

Doctor Workload

10.00%

Count of Total Patients

10,000

Total Lab Tests Conducted

10,000

Total Revenue

\$5,247,454.52

Doctor Specializations

Specialization	
Cardiology	191
General Medici..	191
Neurology	225
Orthopedics	198
Pediatrics	195

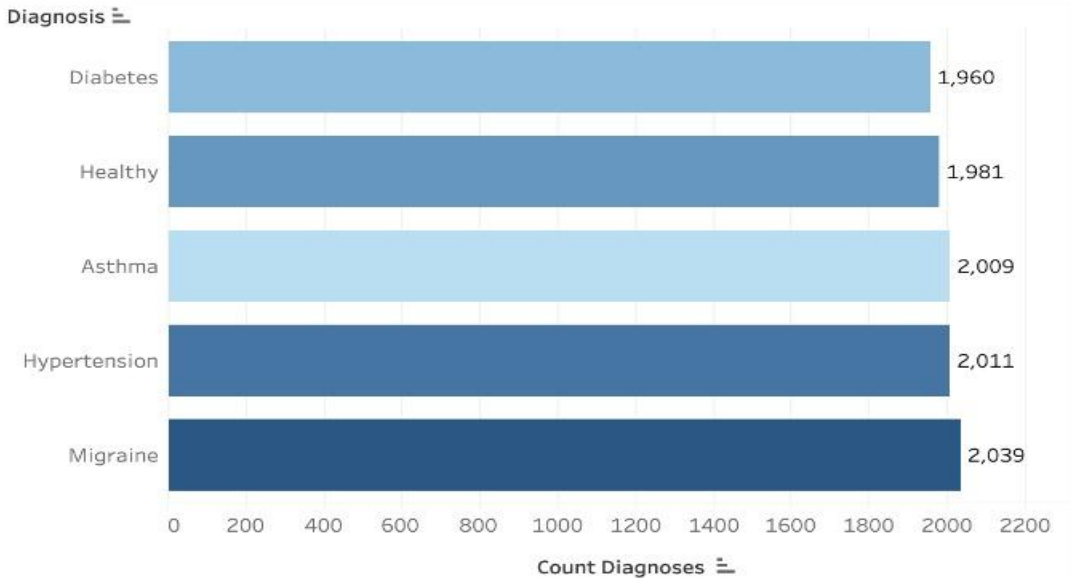


Healthcare Diagnostics

Year of Visit Date

(All)

Top 5 Diagnosed Conditions





MySQLTM

MySQL Queries

The screenshot displays the MySQL Workbench interface for a local instance of MySQL 8.0. The left sidebar shows the 'SCHEMAS' panel with a tree view of the database structure. The 'visit' table is expanded, showing columns like Visit_Id, Patient ID, Doctor ID, Visit Date, Reasons For Visit, Diagnosis, Follow Up Required, Visit Type, Visit Status, Diagnosis Code, Follow-up Required, Reason for Visit, and Prescribed Medication. The 'Indexes' panel is also visible. The main editor window, titled 'Mysql Presentation*', contains a list of SQL queries. The queries are as follows:

```
1 • create database healthcare;
2 • use healthcare;
3
4 -- 1)Total Patient
5 • select count(patient_id) as Count_Of_Patient from patient_cleaned1;
6
7 -- 2)Total Doctor
8 • select count(Doctor_id) as Count_Of_Doctor from doctor;
9
10 -- 3)Total Visit
11 • select count(Visit_ID) as "Total Visit" from visit;
12
13 -- 4)Avg Age of Patient
14 • SELECT CEIL(AVG(Age)) AS "avg age of Patients"
15 FROM patient_cleaned1;
16
17 -- 5)Treatment Cost per Visit
18 • select avg(`Treatment Cost`) from treatment;
19
20 -- 6)Total lab test Conducted
21 • select count(Result_id) as Total_Lab_Conducted from `lab results`;
22
23 -- 7)Follow up Required
24 • SELECT `Follow-up Required`, COUNT(*) AS Count
25 FROM visit
26 WHERE `Follow-up Required` IN ("Yes", "No")
```

The bottom status bar shows the system clock as 22:32 on 11-04-2025, along with various system icons and the language set to ENG.

MySQL Queries

The screenshot displays the MySQL Workbench interface for a local instance of MySQL 8.0. The left sidebar shows the 'SCHEMAS' panel with a tree view of the database structure. The 'visit' table is expanded, showing columns like Visit_Id, Patient ID, Doctor ID, Visit Date, Reasons For Visit, Diagnosis, Follow Up Required, Visit Type, Visit Status, Diagnosis Code, Follow-up Required, Reason for Visit, and Prescribed Medication. The 'Indexes' panel is also visible. The main editor window, titled 'Mysql Presentation*', contains several SQL queries. The bottom status bar shows the 'Object Info' tab with details for the 'Treatment Cost' column, defined as a double.

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator: Schemas

Filter objects

Triggers

visit

Columns

- Visit_Id
- Patient ID
- Doctor ID
- Visit Date
- Reasons For Visit
- Diagnosis
- Follow Up Required
- Visit Type
- Visit Status
- Diagnosis Code
- Follow-up Required
- Reason for Visit
- Prescribed Medication

Indexes

Administration Schemas

Information

Column: Treatment Cost

Definition: Treatment Cost double

Object Info Session

Mysql Presentation* x

Limit to 1000 rows

```
23 -- 7)Follow up Required
24 • SELECT `Follow-up Required`, COUNT(*) AS Count
25 FROM visit
26 WHERE `Follow-up Required` IN ("Yes", "No")
27 GROUP BY `Follow-up Required`;
28
29 -- 8)Top 5 Diagnosed condition
30 • SELECT Diagnosis, COUNT(*) AS count
31 FROM visit
32 GROUP BY Diagnosis
33 ORDER BY count DESC
34 LIMIT 5;
35
36 -- 9)Abnormal Lab Result
37 • select `Normal Range` from `lab results`;
38 • select Result ,count(*) as Count from `lab results` group by Result;
39
40 -- 10)Doctor Workload
41 • SELECT
42     (SELECT COUNT(patient_id) FROM patient_cleaned1) /
43     (SELECT COUNT(Doctor_id) FROM doctor) AS Doctor_workload;
44
45 -- 11)Total Revenue
46
47 • select sum(cast(`Treatment Cost` as unsigned)) as Revenue from treatment;
48
```

Type here to search

22:32 11-04-2025

Recommendations & Action Plan

- 1. Enhance Patient Retention:** Improve follow-up rates through reminders, digital health consultations, and personalized engagement.
- 2. Strengthen Chronic Disease Management:** Focus on hypertension, diabetes, and migraine treatment programs.
- 3. Optimize Healthcare Costs & Doctor Workload:** Assess treatment costs and balance doctor workloads for efficiency.
- 4. Improve Lab Test Utilization:** Since nearly 50% of lab tests return abnormal results, early detection programs should be reinforced.
- 5. Leverage Regional & Condition-based Insights:** Use geographic data to deploy targeted interventions in different cities.

CONCLUSION

In summary, while we are performing well in terms of patient engagement and revenue generation, there are clear opportunities to enhance follow-up care, address chronic health conditions more proactively, and ensure optimal use of resources.

These insights will support informed decision-making, help us improve patient outcomes, and drive continued growth and efficiency across our healthcare services.



Thank You!