

# **CITY GENERAL HOSPITAL OPERATIONAL PERFORMANCE ANALYSIS**

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# Problem Statement

- City General Hospital is facing operational breakdown across various departments.
- There is an overcrowded emergency department and patients and preparation.
- Some staff are complaining of high workload.
- Medication stock is mismanaged leading to shortages and waste of expired excesses.
- High rate of inconclusive lab tests.
- Insurance reimbursement is inconsistent.

# Objectives

- To understand patient demographics.
- To examine admission types to detect patterns in emergency spikes.
- To evaluate doctor workload distribution.
- To assess medication utilization patterns.
- To find the root causes of inconclusive laboratory results
- To analyse billing and insurance data to uncover underpaying insurance providers

# Dataset Overview

## Data Source

- City Hospital Dataset

Original dataset structure

- 55500 rows and 17 columns

Cleaned dataset structure

- 55500 rows and 19 columns

## Data cleaning

- No rows with errors
- No duplicates rows
- No missing values
- No data inconsistencies

# Methodology

## **Tools & Techniques**

- Microsoft Excel (Pivot Tables, Pivot Charts, Slicers).
- Data cleaning and transformation in Excel.
- Dashboard layout and visualization best practices.
- Basic descriptive analytics and KPI design.

## **Added columns**

- Age group
- Admissions duration



# CITY HOSPITAL ANALYTICS DASHBOARD



Gender



Female

Male

Non-binary

Age group



Adult

Elderly

Middle Aged

Teenager

Test Res...



Abnormal

Inconclusive

Normal



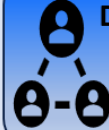
TOTAL PATIENTS

55500



TOTAL DOCTORS

40341



DOCTORS: PATIENTS

1 : 1.4



AVG ADM DURATION

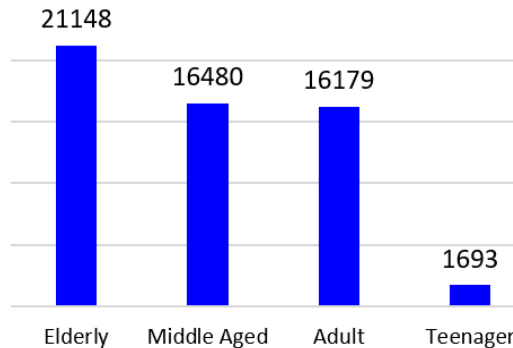
15.51



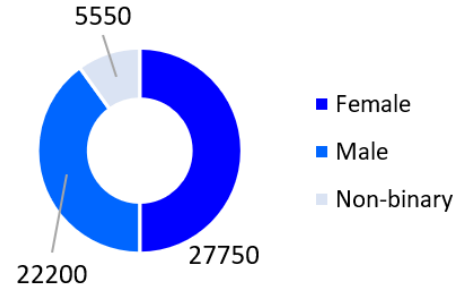
TOTAL BILLING AMOUNT

\$ 1,417,432,043

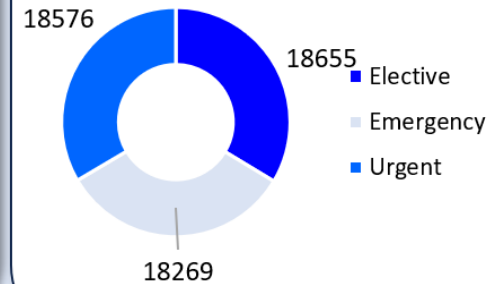
Patient Distribution by Age Group



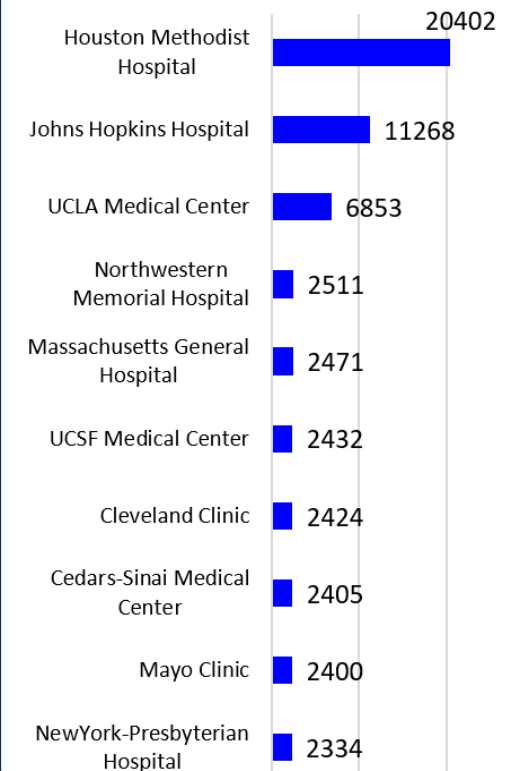
Patient Distribution by Gender



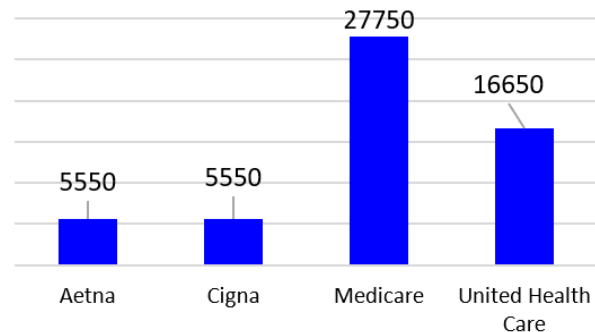
Hospital Admission by Type



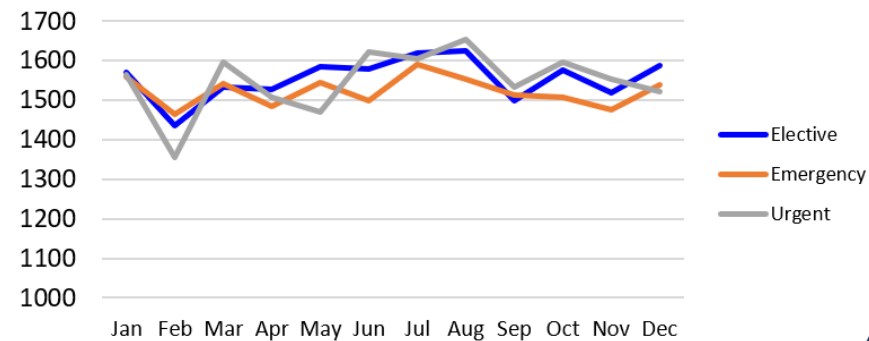
Hospital by Patient Volume



Hospital Admission by Insurance



Monthly Hospital Admission Trend



# Data Insight

- Total patients: 55500
- Total Doctors: 40341
- Teenagers represent the smallest group (1,693), 3% of the population
- The population is more of elderly (21,148).
- The admission types are almost evenly distributed.
- Elective admissions being the highest (18,655).
- Monthly admissions are consistent, showing no extreme spikes.
- Medicare Insurance has the highest enrolment, with 50% of the patients (27,750).



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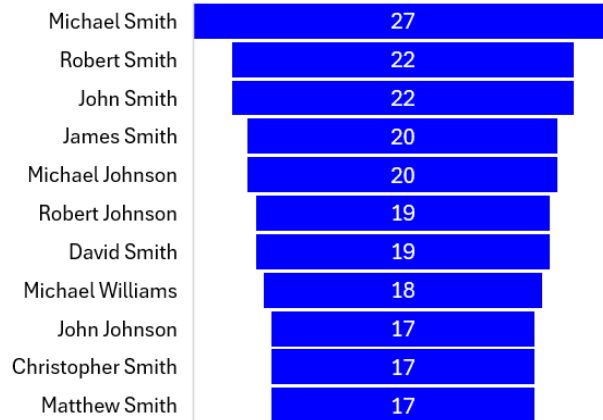
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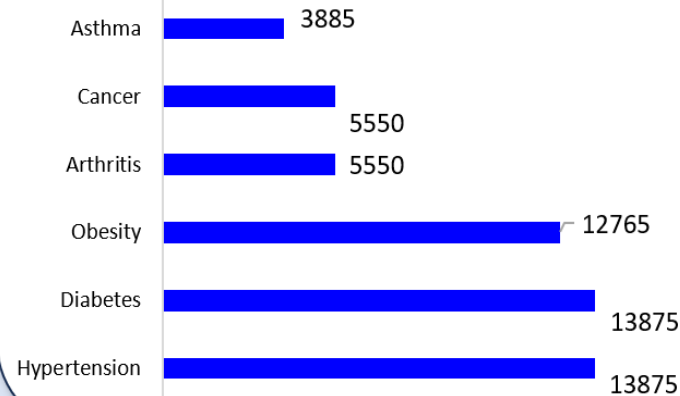
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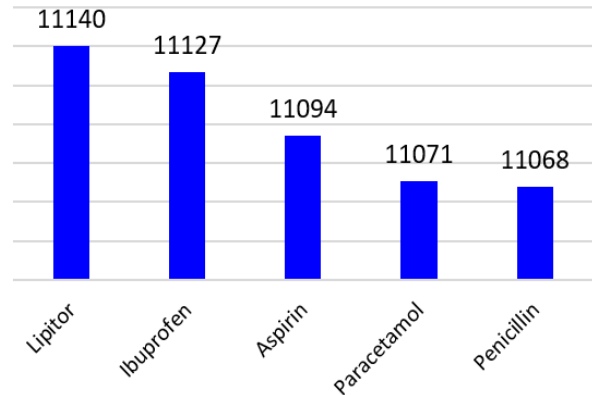
Top 10 Performing Doctors by Patient Load



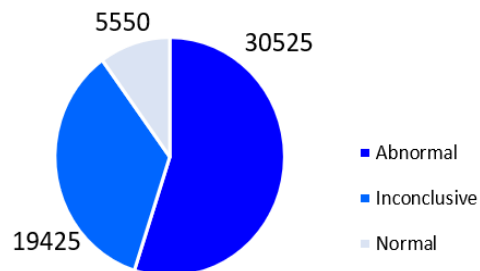
Patients by Medical Condition



Medication Utilization by Patient Count



Test Result Distribution



Test Outcomes Across Blood Groups

Blood Grp	Abnormal	Inconclusive	Normal
A+	19425	0	0
O+	11100	2775	0
O-	0	2775	5550
B-	0	2775	0
B+	0	2775	0
AB-	0	2775	0
A-	0	2775	0
AB+	0	2775	0

Test Outcomes Across Medical Conditions

Condition	Abnormal	Inconclusive	Normal
Cancer	5550	0	0
Arthritis	0	0	5550
Hypertension	13875	0	0
Asthma	3885	0	0
Diabetes	7215	6660	0
Obesity	0	12765	0



# Data Insight

- Houston Methodist Hospital is handling a disproportionately high patient volume.
- This is more than one-third of the patients (20,402).
- Some doctors are handling significantly more patients than others.
- The top ten performing doctors had patient load varying between 17–27 patients.
- Meanwhile, the doctor to patient ratio is 1 : 1.4.
- Hypertension and Diabetes are the leading conditions (13,875 each).

# Data Insight

- Inconclusive test results were of most blood groups are the same count, 2775.
- This suggests that there could lab operational error.
- Only patients with obesity and diabetes had inconclusive test results.
- This could be related to investigations for diabetes and obesity.
- There is not much difference between the number of drugs used, however, Penicillin is the least prescribed medication.

# Recommendation

- Redistribute doctor and hospital workload.
- Strengthen chronic disease management pathways such as hypertension and diabetes.
- Adopt a hospital-wide digital health system.
- More data should be collected on insurance and amount reimbursed.
- Equipment used for diabetes and obesity investigations should be inspection.
- Implement a rea-time stock monitoring system to track stock balance of drug, expiry dated and daily trend.



**THANK YOU**