

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	Filter
Female	<input checked="" type="checkbox"/>
Male	<input type="checkbox"/>
Non-binary	<input type="checkbox"/>

Age group	Filter
Adult	<input type="checkbox"/>
Elderly	<input type="checkbox"/>
Middle Aged	<input type="checkbox"/>
Teenager	<input type="checkbox"/>

Test Res...	Filter
Abnormal	<input type="checkbox"/>
Inconclusive	<input type="checkbox"/>
Normal	<input type="checkbox"/>



TOTAL PATIENTS
55500



TOTAL DOCTORS
40341



DOCTORS:PATIENTS
1 : 1.4

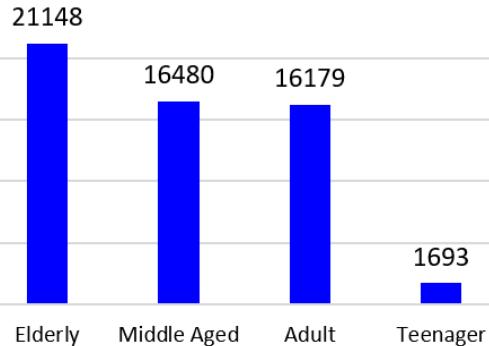


Avg Adm Duration
15.51

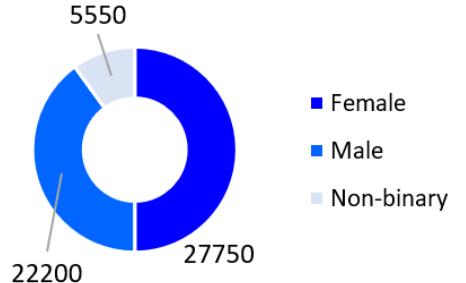


TOTAL BILLING AMOUNT
\$ 1,417,432,043

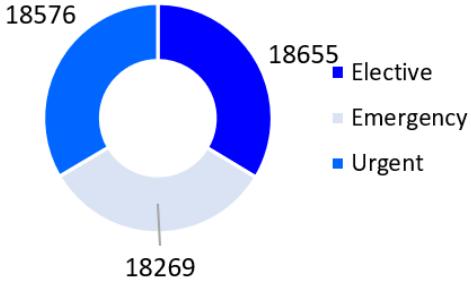
Patient Distribution by Age Group



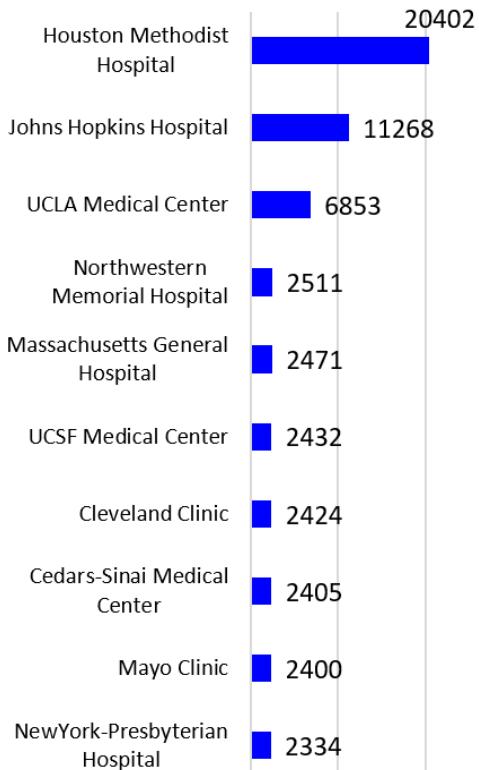
Patient Distribution by Gender



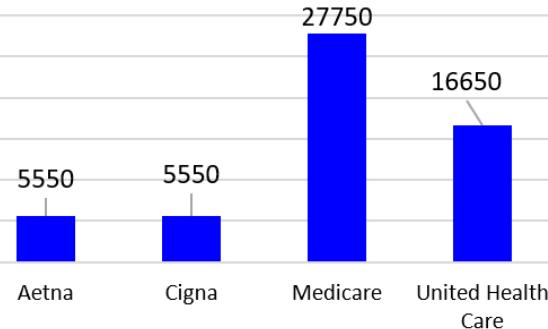
Hospital Admission by Type



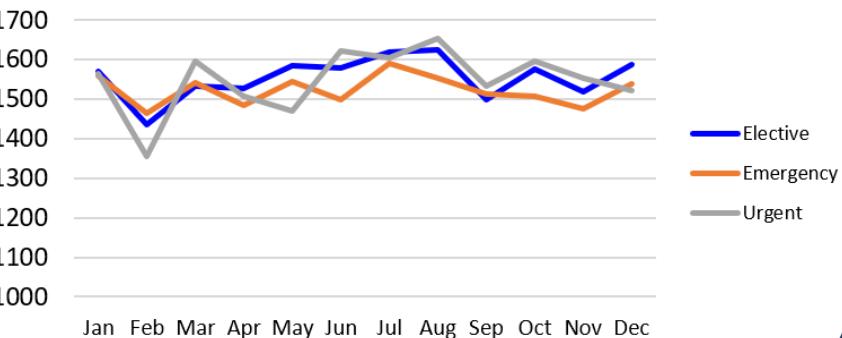
Hospital by Patient Volume



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).



CITY HOSPITAL ANALYTICS DASHBOARD



Gender

- Female
- Male
- Non-binary

Age group

- Adult
- Elderly
- Middle Aged
- Teenager

Test Res...

- Abnormal
- Inconclusive
- Normal

TOTAL PATIENTS
55500TOTAL DOCTORS
40341DOCTORS:PATIENTS
1 : 1.4AVG ADM DURATION
15.51TOTAL BILLING AMOUNT
\$ 1,417,432,043

Top 10 Performing Doctors by Patient Load

Michael Smith	27
Robert Smith	22
John Smith	22
James Smith	20
Michael Johnson	20
Robert Johnson	19
David Smith	19
Michael Williams	18
John Johnson	17
Christopher Smith	17
Matthew Smith	17

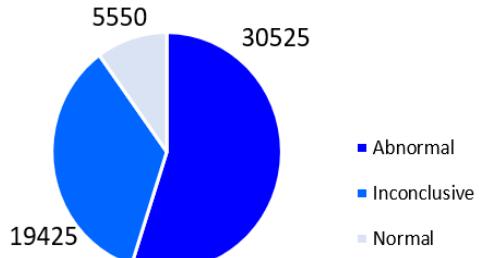
Patients by Medical Condition

Asthma	3885
Cancer	5550
Arthritis	5550
Obesity	12765
Diabetes	13875
Hypertension	13875

Medication Utilization by Patient Count

Lipitor	11140
Ibuprofen	11127
Aspirin	11094
Paracetamol	11071
Penicillin	11068

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