

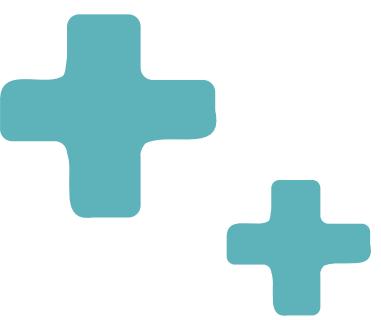


# HOSPITAL HEALTHCARE INSIGHTS

 GUVI Internship- Business Insights Dashboard

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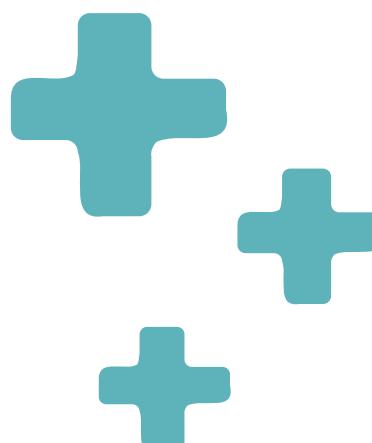


# WHY THIS PROJECT?

**To understand hospital patient demographics, resource utilization, medical conditions, and financial trends.**

**Quantitative data:** Deliverable → interactive dashboard

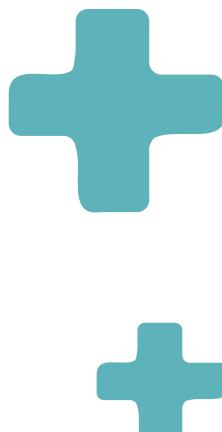
**Goal:** Identify patterns in patient admissions, medical conditions, length of stay, billing amounts, and medication usage to support data-driven hospital management



# DATASET TABLE

## Hospital Patient Healthcare Analysis

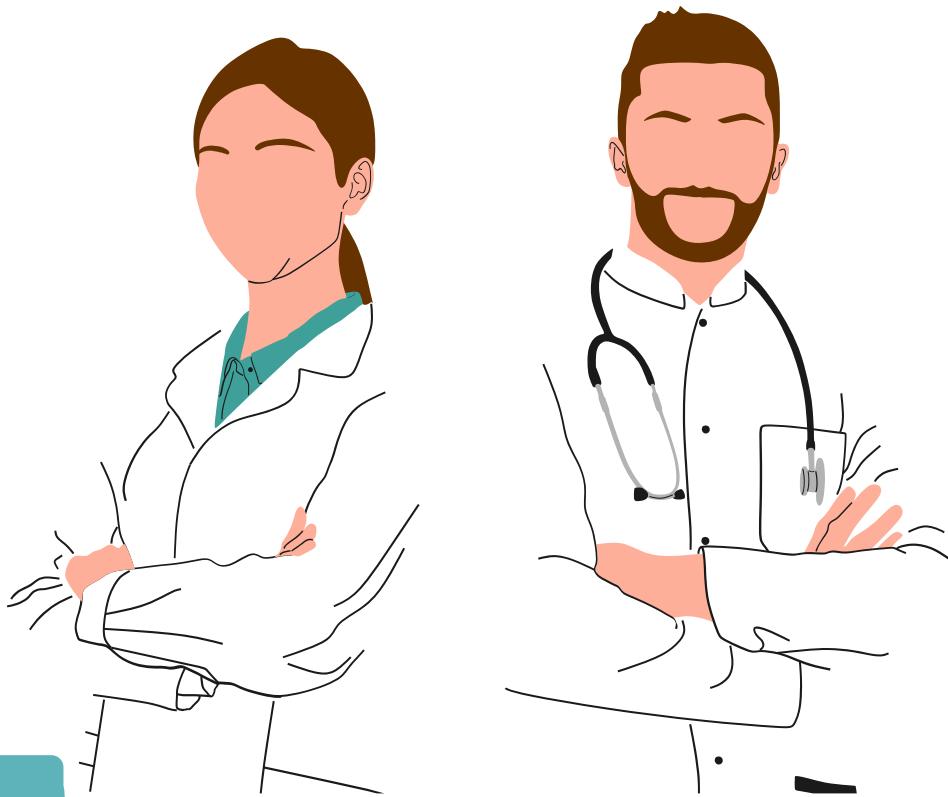
| A          | B       | C      | D          | E                 | F                 | G          | H                   | I                          | J              |             |
|------------|---------|--------|------------|-------------------|-------------------|------------|---------------------|----------------------------|----------------|-------------|
| Patient ID | Age     | Gender | Blood Type | Medical Condition | Date of Admission | Doctor     | Hospital            | Insurance Provider         | Billing Amount |             |
| 1          | ID-2621 | 64     | Female     | A+                | Hypertension      | 03-03-2020 | Jessica Marshall    | Houston Methodist Hospital | Medicare       | 43913.98374 |
| 2          | ID-2623 | 18     | Female     | A+                | Hypertension      | 12-09-2022 | Sean Jimenez        | Houston Methodist Hospital | Medicare       | 21146.04893 |
| 3          | ID-2624 | 57     | Female     | A+                | Hypertension      | 26-02-2022 | Jennifer Crawford   | Houston Methodist Hospital | Medicare       | 47946.86128 |
| 4          | ID-2634 | 77     | Female     | A+                | Hypertension      | 11-12-2020 | Tiffany Ramirez     | Houston Methodist Hospital | Medicare       | 13385.07791 |
| 5          | ID-2720 | 81     | Female     | A+                | Hypertension      | 19-09-2019 | Peter Roberts       | Houston Methodist Hospital | Medicare       | 32984.89368 |
| 6          | ID-2731 | 79     | Female     | A+                | Hypertension      | 31-07-2021 | Tina Ramirez        | Houston Methodist Hospital | Medicare       | 42232.81794 |
| 7          | ID-2820 | 23     | Female     | A+                | Hypertension      | 07-09-2022 | Erica Cortez        | Houston Methodist Hospital | Medicare       | 358.7678519 |
| 8          | ID-2831 | 76     | Female     | A+                | Hypertension      | 17-08-2023 | Andre Kim           | Houston Methodist Hospital | Medicare       | 29539.89044 |
| 9          | ID-2833 | 34     | Female     | A+                | Hypertension      | 04-04-2021 | Erik Stewart        | Houston Methodist Hospital | Medicare       | 41335.69403 |
| 10         | ID-2834 | 52     | Female     | A+                | Hypertension      | 26-03-2023 | Kenneth Holloway    | Houston Methodist Hospital | Medicare       | 5506.470597 |
| 11         | ID-2930 | 56     | Female     | A+                | Hypertension      | 01-05-2024 | Frederick Harris    | Houston Methodist Hospital | Medicare       | 40009.81314 |
| 12         | ID-2932 | 80     | Female     | A+                | Hypertension      | 23-01-2020 | Lisa Walker         | Houston Methodist Hospital | Medicare       | 26848.32029 |
| 13         | ID-3024 | 84     | Female     | A+                | Hypertension      | 13-10-2021 | Michelle Madden     | Houston Methodist Hospital | Medicare       | 43400.07126 |
| 14         | ID-3031 | 54     | Female     | A+                | Hypertension      | 07-03-2020 | Elizabeth Thompson  | Houston Methodist Hospital | Medicare       | 8658.458293 |
| 15         | ID-3130 | 58     | Female     | A+                | Hypertension      | 28-09-2021 | Jeremy Thompson     | Houston Methodist Hospital | Medicare       | 14783.10229 |
| 16         | ID-3131 | 78     | Female     | A+                | Hypertension      | 08-04-2020 | Brandy Orozco       | Houston Methodist Hospital | Medicare       | 33988.16523 |
| 17         | ID-3133 | 27     | Female     | A+                | Hypertension      | 18-07-2020 | Hannah Wang         | Houston Methodist Hospital | Medicare       | 32976.935   |
| 18         | ID-3134 | 76     | Female     | A+                | Hypertension      | 16-09-2023 | Mathew Nunez        | Houston Methodist Hospital | Medicare       | 14532.91609 |
| 19         | ID-3220 | 64     | Female     | A+                | Hypertension      | 29-02-2020 | Harold Fields       | Houston Methodist Hospital | Medicare       | 39739.75248 |
| 20         | ID-3222 | 40     | Female     | A+                | Hypertension      | 27-06-2021 | Christine Hernandez | Houston Methodist Hospital | Medicare       | 5148.125605 |
| 21         | ID-3233 | 61     | Female     | A+                | Hypertension      | 16-11-2020 | Ruben Lynn          | Houston Methodist Hospital | Medicare       | 12959.21611 |
| 22         | ID-3234 | 23     | Female     | A+                | Hypertension      | 02-02-2023 | Jessica Davis       | Houston Methodist Hospital | Medicare       | 18789.20693 |
| 23         | ID-3320 | 76     | Female     | A+                | Hypertension      | 04-12-2023 | Heather Li          | Houston Methodist Hospital | Medicare       | 39961.75336 |
| 24         | ID-3321 | 32     | Female     | A+                | Hypertension      | 23-03-2022 | Sabrina Khan        | Houston Methodist Hospital | Medicare       | 9827.867172 |
| 25         | ID-3322 | 60     | Female     | A+                | Hypertension      | 16-05-2023 | Sarah Patel         | Houston Methodist Hospital | Medicare       | 37456.51905 |
| 26         | ID-3330 | 44     | Female     | A+                | Hypertension      | 23-04-2022 | Vanessa Smith       | Houston Methodist Hospital | Medicare       | 7836.229611 |
| 27         | ID-3332 | 80     | Female     | A+                | Hypertension      | 09-11-2021 | Linda Houston       | Houston Methodist Hospital | Medicare       | 38858.32302 |
| 28         | ID-3333 | 70     | Female     | A+                | Hypertension      | 20-06-2020 | Walter Mitchell     | Houston Methodist Hospital | Medicare       | 9783.610747 |



# DATA PREPROCESSING & TRANSFORMATIONS



- **Missing values** handled by imputation or removal.
- **Duplicate** records eliminated.
- Data types corrected for **date, numerical, and categorical fields**



# EXPLORATORY DATA ANALYSIS (EDA)

- **Age-group** analysis of admitted patients
- Top **medical condition categories** (e.g., Hypertension, Diabetes)
- **Admission trends** by weekday vs. weekend
- Distribution of length of **hospital stay**
- **Billing pattern** by patient and stay duration
- **Medication** usage comparison across conditions



# DAX CALCULATIONS (MEASURES & COLUMNS)

## Measures

- **Average Age** = AVERAGE(PatientRecords[Age])
- **Average Billing** = AVERAGE(Billing[Amount])
- **Average Length of Stay** =  
AVERAGE(PatientRecords[LOS])



## Calculated Columns

- **Admission Type Category** =  
 $\text{IF}(\text{PatientRecords}[\text{AdmissionCode}] \text{ IN } \{\text{"Elective"}, \text{"Emergency"}, \text{"Urgent"}\}, \text{PatientRecords}[\text{AdmissionCode}], \text{"Other"})$
- **LOS Bucket** =  $\text{IF}(\text{PatientRecords}[\text{LOS}] >= 15, \text{"Extended Stay"}, \text{IF}(\text{PatientRecords}[\text{LOS}] >= 8, \text{"Long Stay"}, \text{IF}(\text{PatientRecords}[\text{LOS}] >= 4, \text{"Moderate Stay"}, \text{"Short Stay"})))$

# PATIENT DEMOGRAPHICS POWER BI DASHBOARD

## Hospital Healthcare Insights

Month Name: May | Year: 2023

|  |   |  |
|--|---|--|
| Admitted Patients: 2   ↓ -92.3% Vs 2022  | Doctors: 2   ↓ -92.3% Vs 2022           | Avg Billing Amount: \$26,355   ↓ -7.4% Vs 2022 |
| Avg LOS (Days): 11.00   ↓ -13.6% Vs 2022 | Rooms / Bed Space: 2   ↓ -92.3% Vs 2022 | Avg Age: 54.00   ↑ 22.2% Vs 2022               |

Medical Condition: Asthma

Asthma is a chronic condition that causes inflammation and narrowing of the airways, leading to difficulty breathing, coughing, wheezing, and shortness of breath.

Normal: 0 (0%)

Inclusive: 0% (0%)

Abnormal: 2 (100%)

### Hospital Location Map

NewYork-Presbyterian Hospital

Admitted Patients by Hospital and Medical Condition

| Hospital                       | Arthritis | Asthma | Cancer | Diabetes | Hypertension | Obesity | Total |
|--------------------------------|-----------|--------|--------|----------|--------------|---------|-------|
| Cedars-Sinai Medical Center    | 7         | 1      | 8      | 9        | 7            | 10      | 42    |
| Cleveland Clinic               | 5         | 3      | 4      | 20       | 13           | 16      | 61    |
| Houston Methodist Hospital     | 31        | 24     | 41     | 76       | 87           | 64      | 323   |
| Johns Hopkins Hospital         | 14        | 4      | 17     | 47       | 50           | 36      | 168   |
| Massachusetts General Hospital | 3         | 3      | 5      | 10       | 13           | 13      | 47    |
| Mayo Clinic                    | 4         | 2      | 2      | 9        | 17           | 10      | 44    |
| NewYork-Presbyterian Hospital  | 9         | 2      | 2      | 6        | 8            | 6       | 33    |
| Northwestern Memorial Hospital | 6         | 2      | 4      | 10       | 8            | 13      | 43    |
| UCLA Medical Center            | 16        | 7      | 9      | 32       | 40           | 23      | 127   |
| UCSF Medical Center            | 3         | 2      | 4      | 12       | 10           | 8       | 39    |

# FINANCIAL KEY TRENDS POWER BI DASHBOARD

**HOSPITAL HEALTHCARE INSIGHTS**

Patient Demographics      Key Trends      Cost & Treatment

| Medical Condition        |                            | Hospital                              |                                   |
|--------------------------|----------------------------|---------------------------------------|-----------------------------------|
| Asthma                   | Houston Methodist Hospital |                                       |                                   |
| Admitted Patients<br>280 | Doctors<br>279             | Avg Billing Amount<br><b>\$27,717</b> | Avg Age<br>50.75                  |
| Avg LOS (Days)<br>14.98  | Rooms / Bed Space<br>201   | ↓ -6.0% Vs 2022<br>↓ -5.4% Vs 2022    | ↑ 1.6% Vs 2022<br>↓ -3.3% Vs 2022 |

**Admitted Patients by Day Type**

| Day Type | Percentage |
|----------|------------|
| Weekday  | 73.93%     |
| Weekend  | 26.07%     |

**Admitted Patients by LOS Bucket**

| LOS Bucket       | Percentage |
|------------------|------------|
| Short St...      | 11.43%     |
| Modera...        | 15%        |
| Long Stay (8...) | 22.14%     |
| Extended ...     | 51.43%     |

Year

2023

Admitted Patients      Avg LOS      Avg Billing Amt

Currently Viewing Avg Billing Trend

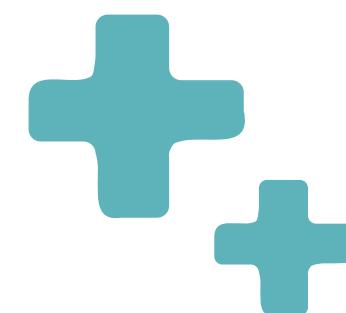
Admission Type ● Elective ● Emergency ● Urgent

| Month | Elective | Emergency | Urgent |
|-------|----------|-----------|--------|
| Jan   | \$30K    | \$30K     | \$40K  |
| Feb   | \$28K    | \$25K     | \$32K  |
| Mar   | \$25K    | \$20K     | \$28K  |
| Apr   | \$22K    | \$20K     | \$25K  |
| May   | \$25K    | \$25K     | \$28K  |
| Jun   | \$30K    | \$30K     | \$35K  |
| Jul   | \$30K    | \$30K     | \$25K  |
| Aug   | \$32K    | \$28K     | \$28K  |
| Sep   | \$25K    | \$25K     | \$32K  |
| Oct   | \$35K    | \$20K     | \$20K  |
| Nov   | \$30K    | \$30K     | \$32K  |
| Dec   | \$28K    | \$30K     | \$40K  |

**Admitted Patients by Day of Week and Month**

| Month Name   | Sunday    | Monday    | Tuesday   | Wednesday | Thursday  | Friday    | Saturday  | Total      |
|--------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| January      | 4         | 3         | 5         | 5         | 5         |           | 2         | 24         |
| February     | 3         | 3         | 1         | 1         | 4         | 2         | 3         | 17         |
| March        |           | 2         | 5         | 9         | 4         | 1         | 1         | 22         |
| April        | 3         |           |           | 1         | 3         | 3         | 7         | 17         |
| May          | 5         | 4         | 2         | 5         | 4         | 2         | 2         | 24         |
| June         | 1         | 5         | 6         | 9         | 3         | 5         | 7         | 36         |
| July         | 2         | 5         | 6         | 2         | 3         | 1         | 8         | 27         |
| August       | 4         | 3         | 5         | 3         | 4         | 6         | 4         | 29         |
| September    | 3         | 5         | 5         | 4         |           | 4         | 5         | 26         |
| October      | 4         | 2         | 4         | 2         | 3         | 8         | 1         | 24         |
| November     | 1         | 1         | 2         | 2         | 5         | 4         | 1         | 16         |
| December     |           | 3         | 2         | 6         | 5         | 2         |           | 18         |
| <b>Total</b> | <b>30</b> | <b>36</b> | <b>43</b> | <b>49</b> | <b>38</b> | <b>41</b> | <b>43</b> | <b>280</b> |

# COST & TREATMENT POWER BI DASHBOARD

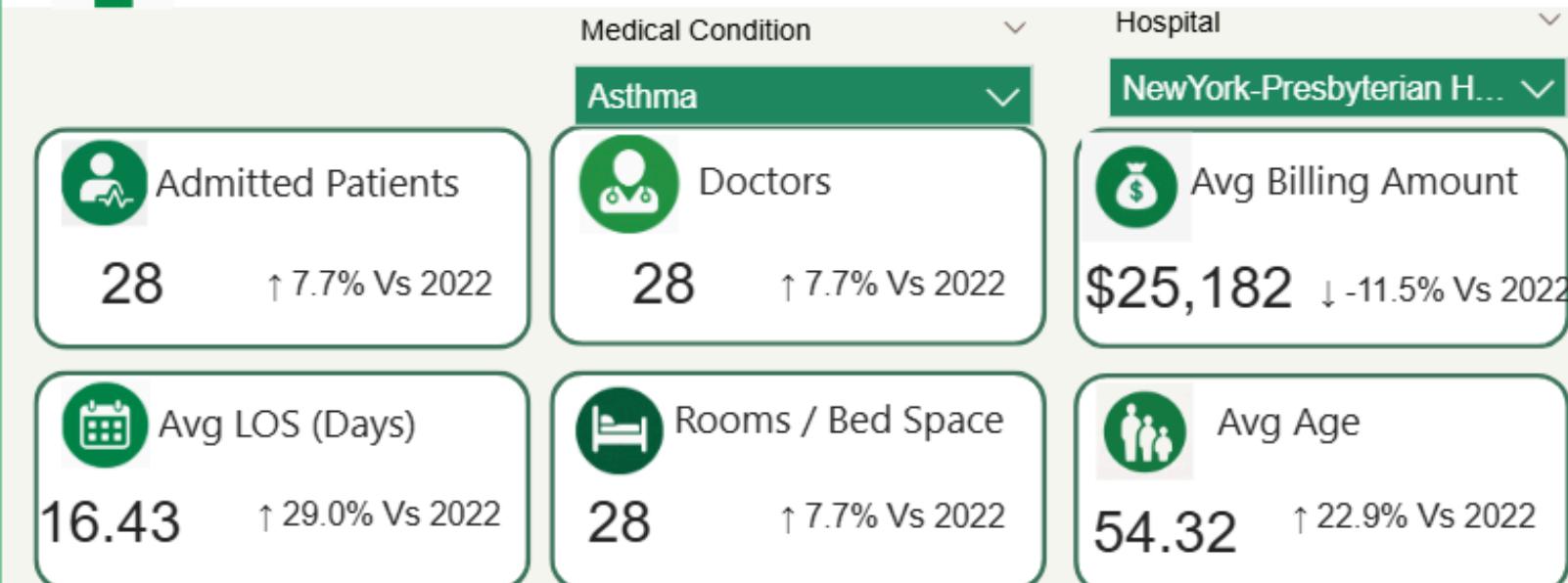


## HOSPITAL HEALTHCARE INSIGHTS

Patient Demographics

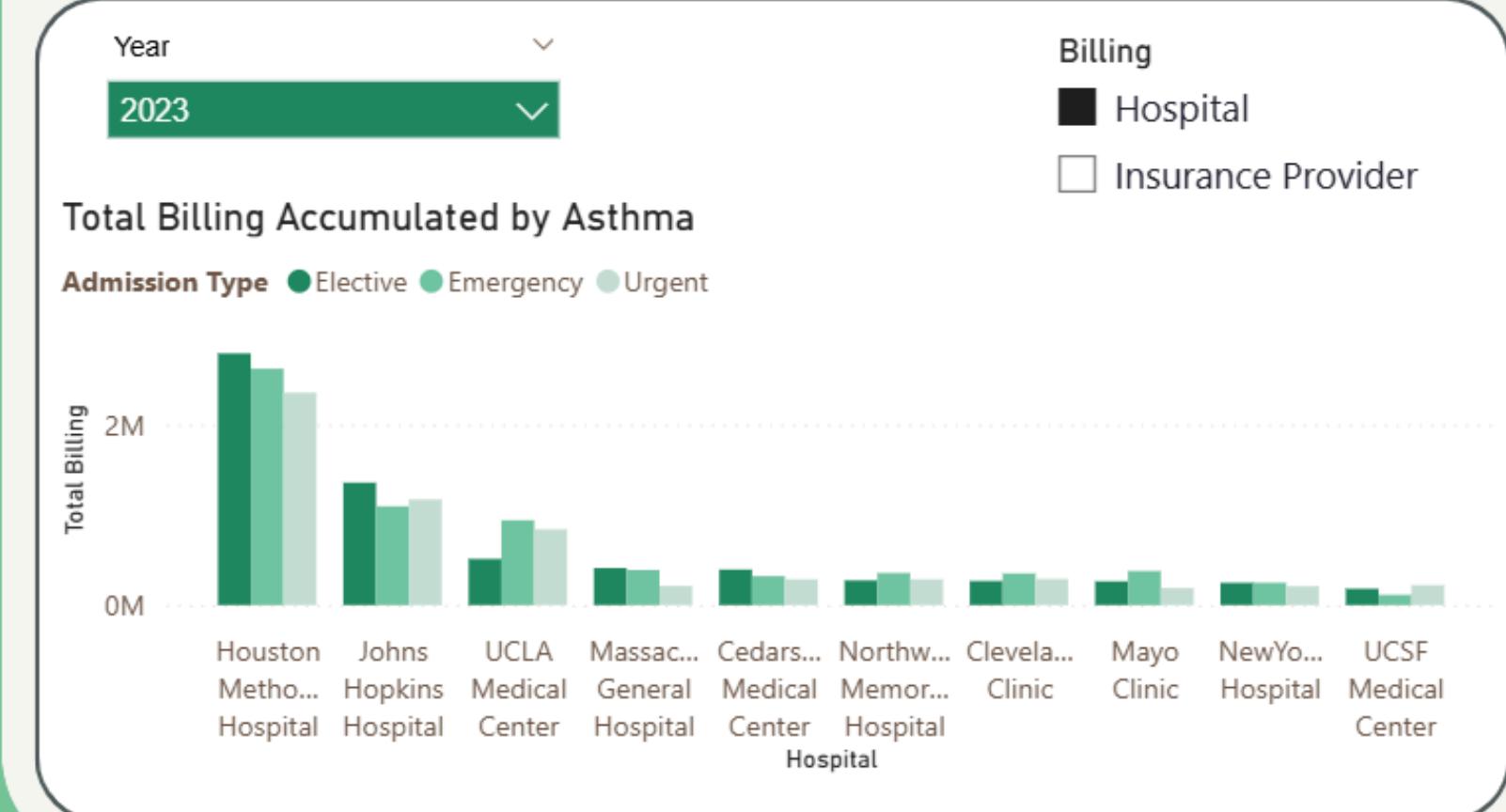
Key Trends

Cost & Treatment



### Total Billing by LOS Bucket and Admission Type

Admission Type: ● Elective ● Emergency ● Urgent



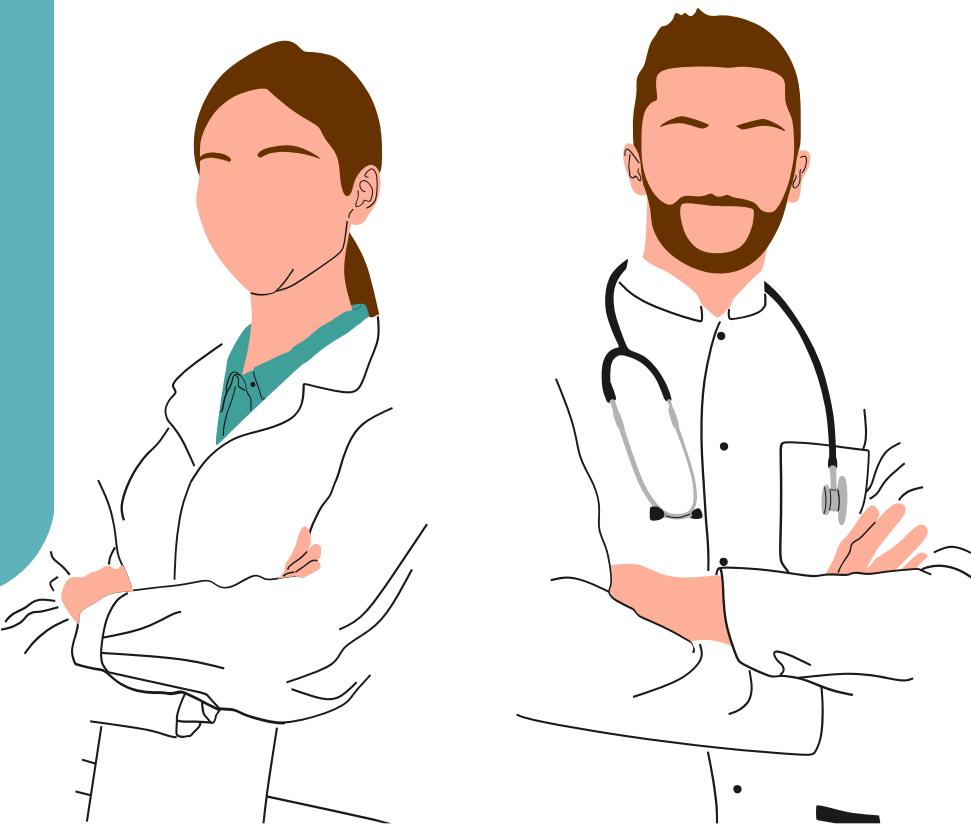
### Medication Usage by Medical Condition

| Medical Condition | Aspirin   | Ibuprofen  | Lipitor   | Paracetamol | Penicillin | Total      |
|-------------------|-----------|------------|-----------|-------------|------------|------------|
| Arthritis         | 13        | 12         | 11        | 11          | 6          | 53         |
| Asthma            | 3         | 8          | 4         | 5           | 8          | 28         |
| Cancer            | 7         | 12         | 9         | 5           | 5          | 38         |
| Diabetes          | 21        | 27         | 34        | 22          | 24         | 128        |
| Hypertension      | 23        | 28         | 15        | 23          | 25         | 114        |
| Obesity           | 20        | 16         | 19        | 22          | 20         | 97         |
| <b>Total</b>      | <b>87</b> | <b>103</b> | <b>92</b> | <b>88</b>   | <b>88</b>  | <b>458</b> |



# RESULTS OUTCOME

- Majority of patients are **middle-aged adults**
- **Hypertension** is the leading cause of admission and medication
- Over **55% of admissions** are extended stays
- Most admissions happen on **weekdays**
- **Diabetes** and **hypertension** drive high medication use
- **Location** and **bed capacity** data support resource planning



# THANK YOU

“Thank you GUVI and my mentors for supporting my journey in healthcare data analysis and Power BI dashboard development.”

