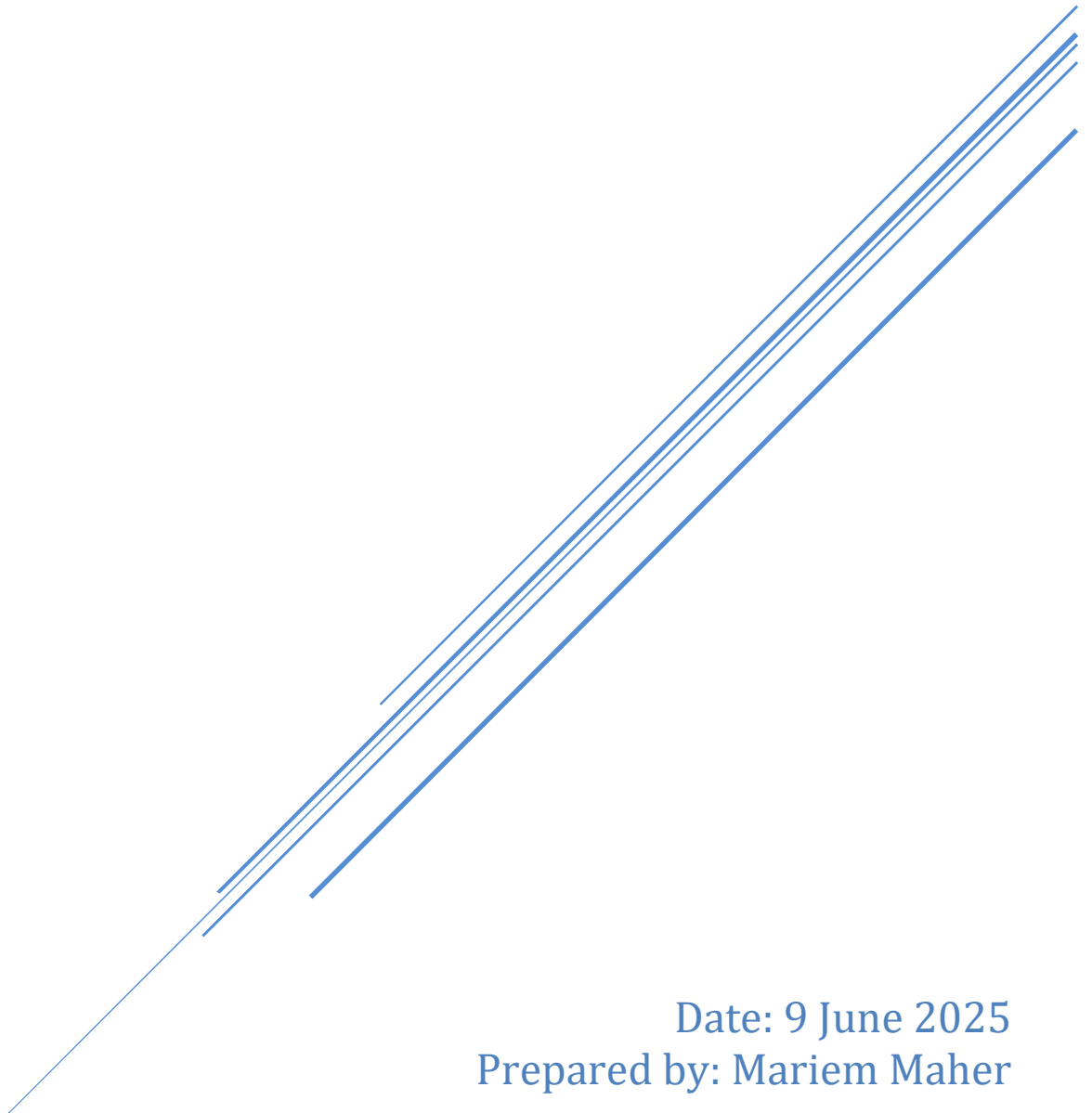# HEALTHCARE ANALYSIS REPORT

Insights for Informed Decision-Making

Date: 9 June 2025
Prepared by: Mariem Maher

Patient Admission and Revenue Decline Analysis – Late 2023 to 2024
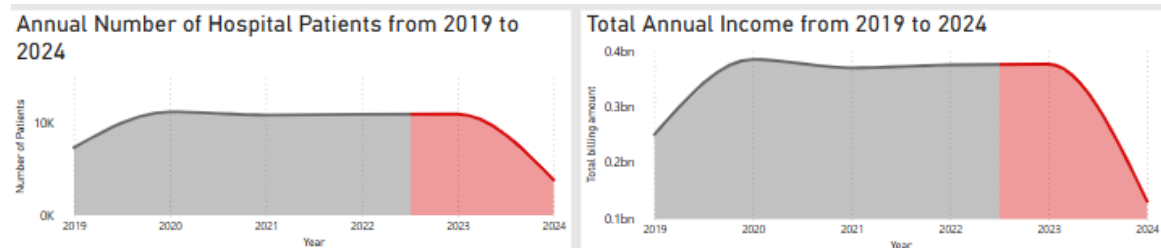
1. Executive Summary

This report investigates a noticeable decline in hospital patient admissions and revenue starting from late 2023 through 2024. The objective is to analyze patterns across demographics, admission types, and common medical conditions to identify possible contributing factors and suggest actionable improvements.
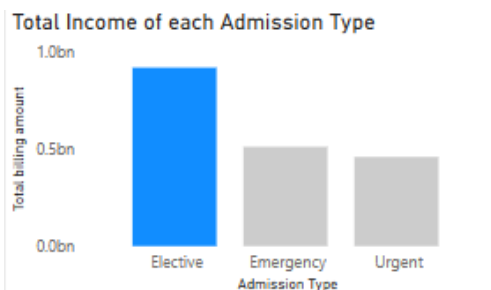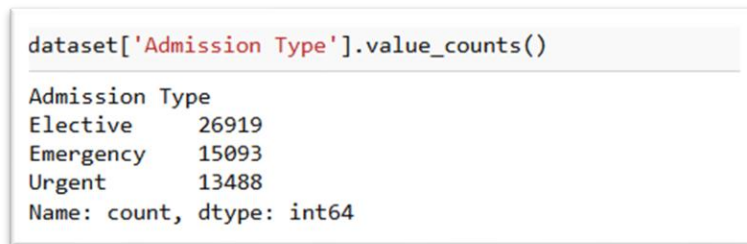
2. Problem Statement

Between late 2023 and the end of 2024, hospitals experienced a sharp drop in patient numbers across all age groups and hospital branches. As a result, revenue has also declined significantly. This analysis seeks to identify relevant trends and provide insight-driven recommendations for recovery.

3. Key Findings

The decline in patient volume began in late 2023 and continued throughout 2024, affecting all hospital groups, which consequently led to a significant decrease in hospital income and revenue.
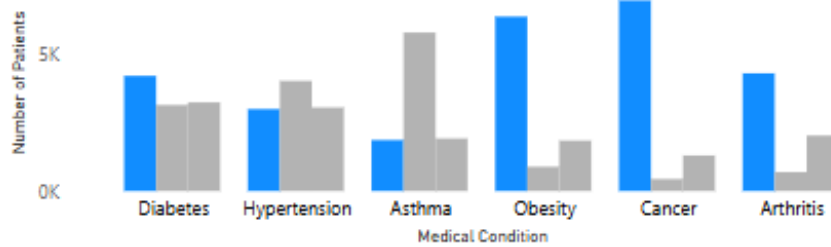

- Elective procedures represent the largest portion of patient admissions and revenue; this category saw the most noticeable decline.


```
dataset['Admission Type'].value_counts()

Admission Type
Elective     26919
Emergency    15093
Urgent       13488
Name: count, dtype: int64
```


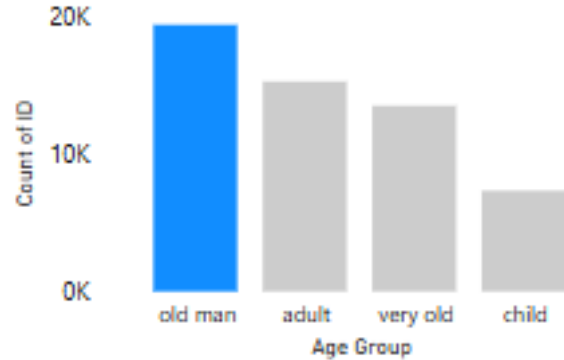- The most common conditions requiring elective care spically obesity, cancer, and arthritis.

Distribution of Patients by Medical Condition and Admission Type

Admission Type ● Elective ● Emergency ● Urgent

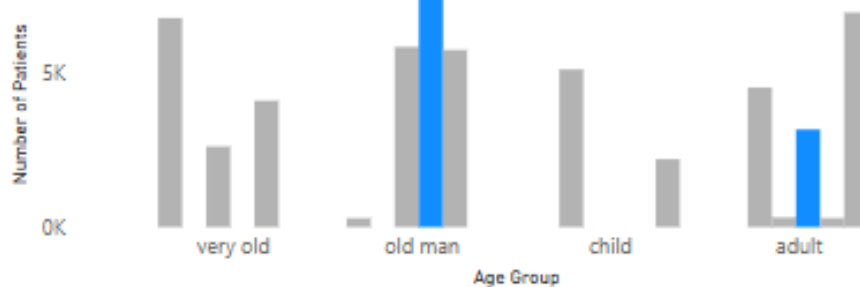- The elderly population (especially old men) represents the largest patient age group overall.

Age Distribution of Patients

- Diabetes is the leading condition among elderly patients.
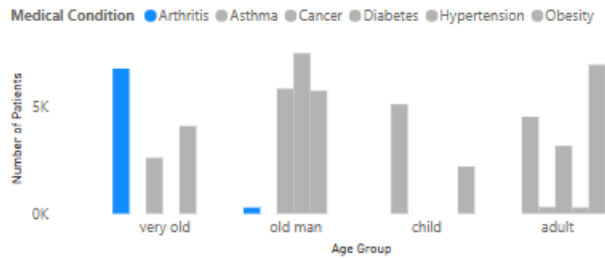
Distribution of Patients Across Age Groups and Medical Conditions

Medical Condition ● Arthritis ● Asthma ● Cancer ● Diabetes ● Hypertension ● Obesity

- Very elderly patients are most frequently admitted with arthritis.

Distribution of Patients Across Age Groups and Medical Conditions

Medical Condition ●Arthritis ●Asthma ●Cancer ●Diabetes ●Hypertension ●Obesity

- Adults are primarily admitted for obesity-related issues.

Distribution of Patients Across Age Groups and Medical Conditions

Medical Condition ●Arthritis ●Asthma ●Cancer ●Diabetes ●Hypertension ●Obesity

- Children are mostly admitted through emergency visits, often due to asthma.

Distribution of Patients Across Age Groups and Medical Conditions

Medical Condition ●Arthritis ●Asthma ●Cancer ●Diabetes ●Hypertension ●Obesity

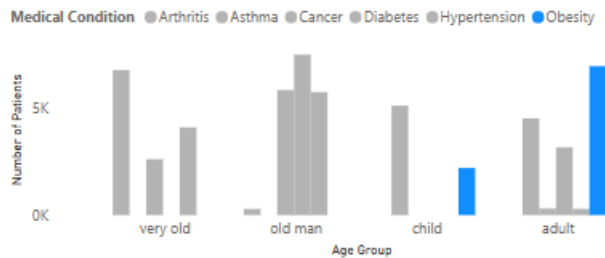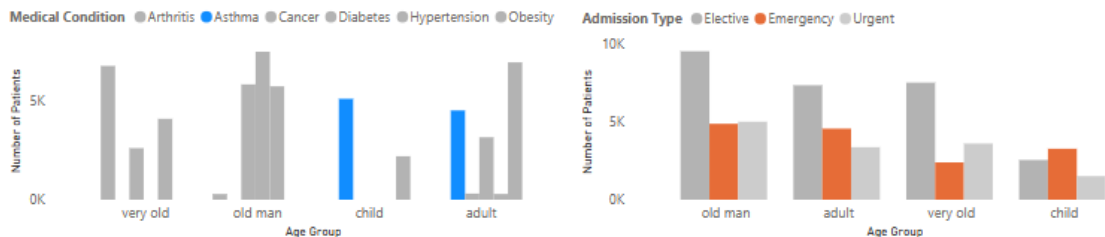**Age Group and Admission Type Distribution of Patients**

Admission Type ●Elective ●Emergency ●Urgent

- Despite clear patterns in demographics and conditions, the dataset does not reveal a direct cause behind the decline in admissions and revenue.

4. Data Highlights

Total Hospitals: 40k

Total Doctors: 40k

Average Length of Stay: 15 Days

Total Patients in 2023: 11026

Total Patients in 2024: 3854

```
dataset['year'] = dataset['Date of Admission'].dt.year
dataset.groupby('year')['ID'].count()

year
2019     7387
2020    11285
2021    10931
2022    11017
2023    11026
2024     3854
Name: ID, dtype: int64
```

Percentage Drop in Patient Volume: 65.05%

Total Revenue (2023 vs 2024):

```
dataset.groupby('year')['Billing Amount'].sum()

year
2019    249,873,869.68
2020    384,823,164.02
2021    369,491,449.77
2022    374,852,197.75
2023    376,298,381.12
2024    130,230,485.47
Name: Billing Amount, dtype: float64
```

Admissions Breakdown:

  - Elective: 48.5 %

  - Emergency: 27.19 %

  -Urgent:24.3 %

```
dataset.groupby('Admission Type')['ID'].count().pipe(lambda x: pd.DataFrame({ 'percentage': x / x.sum() * 100}))
```

Admission Type	percentage
Elective	48.50
Emergency	27.19
Urgent	24.30

Patients by Age Group:

- Children: 13.2%

- Adults: 27.51 %

- Elderly: 34.95 %

- Very Elderly: 24.34 %

```
dataset.groupby('Age Group')['ID'].count().pipe(lambda x: pd.DataFrame({ 'percentage': x / x.sum() * 100}))
```

	percentage
age state	
adult	27.51
child	13.20
old man	34.95
very old	24.34

Most Common Diagnoses:

  1. Diabetes

  2. Obesity

  3. Arthritis

  4. Cancer

  5. Asthma

5. Early Observations

Although the dataset does not explicitly explain the sudden decline, several key patterns suggest areas worth exploring:

- The drop coincides with a reduction in elective procedures, hinting at external pressures (economic, policy, or public fear).
- Chronic condition patients may be delaying care, especially for non-urgent elective treatments.
- Emergency visits by children appear stable, while adult admissions for preventable conditions have decreased.
- The consistent impact across all hospital groups points to system-wide factors rather than localized issues.

6. Recommendations

- Survey Past and Potential Patients – Understand motivations behind skipping or postponing elective care.
- Evaluate Hospital Capacity and Scheduling Systems – Ensure there are no internal barriers to booking or attending appointments.

- Increase Community Engagement and Awareness Campaigns – Educate high-risk patients (e.g., those with diabetes or obesity) on the importance of early care.
- Collaborate with Health Insurance Providers – Improve accessibility and affordability of elective treatments.
- Policy Review and Health System Monitoring – Investigate whether recent policy changes or cost structures have affected access to healthcare services.
- Improve Tracking of Patient Experience and Satisfaction – Introduce better feedback systems to monitor concerns in real-time.

7. Conclusion

The decline in patient admissions and revenue during 2024 marks a concerning trend across the healthcare network. Although the data lacks a direct cause, insights suggest a shift in elective care behavior and demographic-specific trends. Addressing both internal hospital processes and external socioeconomic influences will be crucial in reversing the trend and ensuring service accessibility and sustainability.

8. Appendix

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