Step 1: **Background of the Identified Healthcare Service**

1.1 **Benefits (Advantages & Disadvantages)**

- **Advantages**:

- **Comprehensive Patient Data**: The dataset includes detailed patient demographics (age, gender, blood type), medical history, billing, and treatment information, which can be used to improve personalized care.
- **Revenue Generation**: Revenue data from medications and consultations helps assess financial performance and allocate resources more effectively.
- **Diverse Admission Types**: Different types of admissions (e.g., Urgent, Emergency, Elective) allow us to see how patient needs vary, enabling tailored strategies for resource management.
- **Insurance Coverage**: Information on insurance providers can aid in assessing payment trends, understanding financial class impact, and developing plans to manage uncompensated care.
- **Disadvantages**:

- **High Costs**: Some patients incur significant billing amounts, particularly in urgent or emergency cases, which could strain hospital finances if costs aren't managed.
- **Complexity in Resource Allocation**: The diverse needs (e.g., cancer, obesity, diabetes) and varied admission types may require flexible resource allocation, which can be challenging to manage efficiently.
- **Inconsistent Patient Outcomes**: Variability in test results (Normal, Abnormal, Inconclusive) highlights differences in treatment effectiveness, suggesting that outcome predictability is limited.

1.2 **Problems Faced (Health Informatics Context)**

- **Service Delays and Wait Times**: Variance in "Entry Time," "Post-Consultation Time," and "Completion Time" could lead to patient dissatisfaction, especially in urgent or emergency cases.
- **High Medication and Lab Costs**: Lab and medication costs might not always align with patient outcomes, highlighting potential inefficiencies.
- **Inefficient Resource Usage**: In cases where specialized doctors or specific rooms are overbooked, it can lead to delays and strain on certain resources.
- **Financial Disparities**: Patients with different financial classes and insurance providers might have different access to services, which could affect

Patient Care Summary

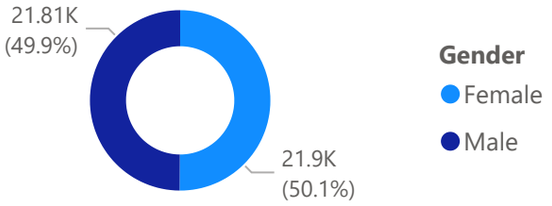
40.24K Total Patients

400 Total Rooms

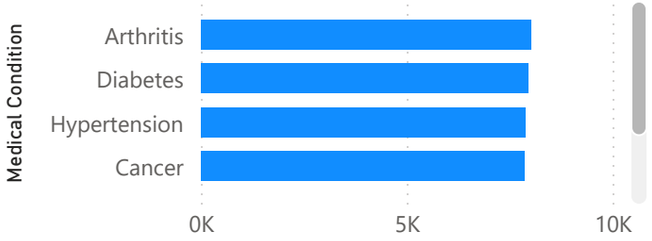
40.34K Total Doctors

39.88K Total Hospitals

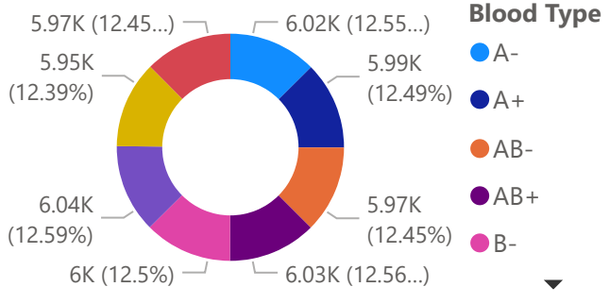
Patients by Gender



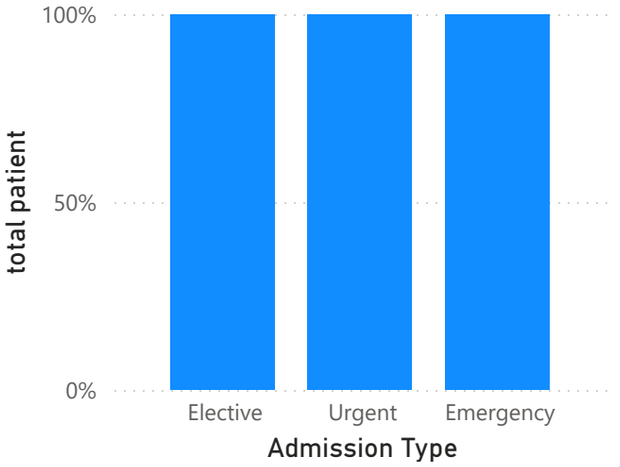
Patients by Medical Condition



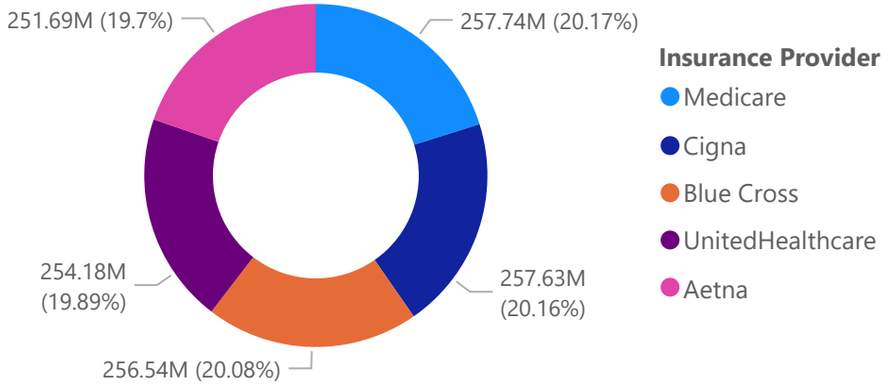
Patients by Blood Type



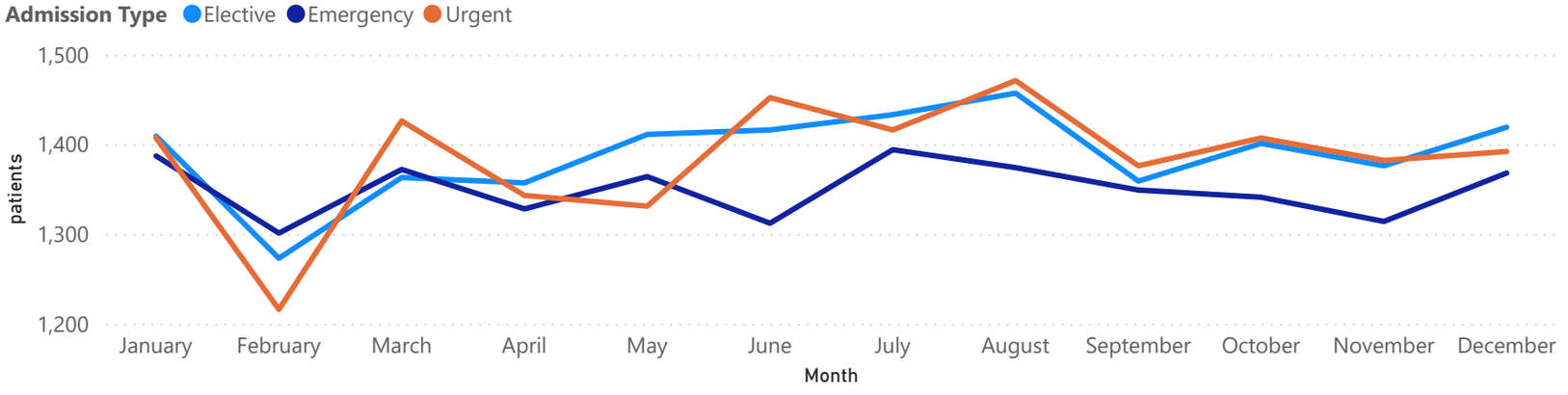
Total Patients by Admission Type



Sum of Billing Amount by Insurance Provider

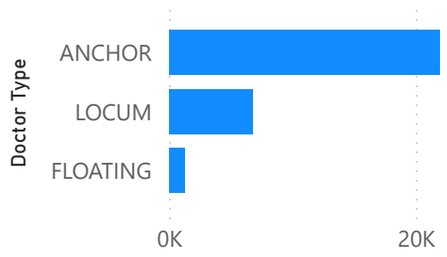


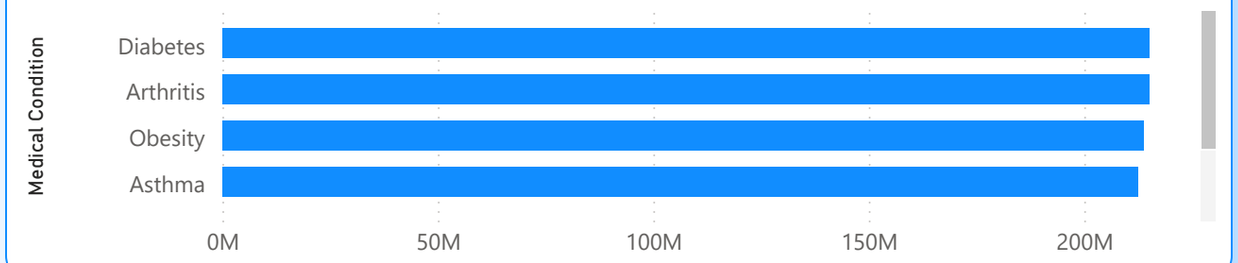
Patients by Month and Admission Type

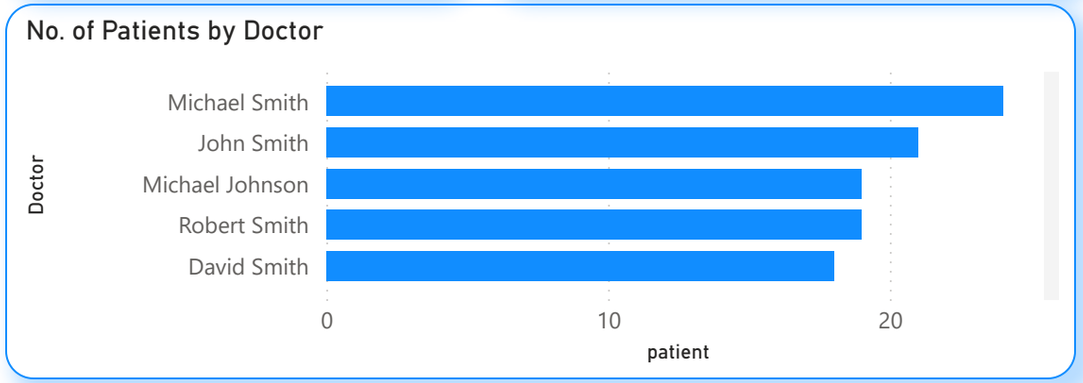


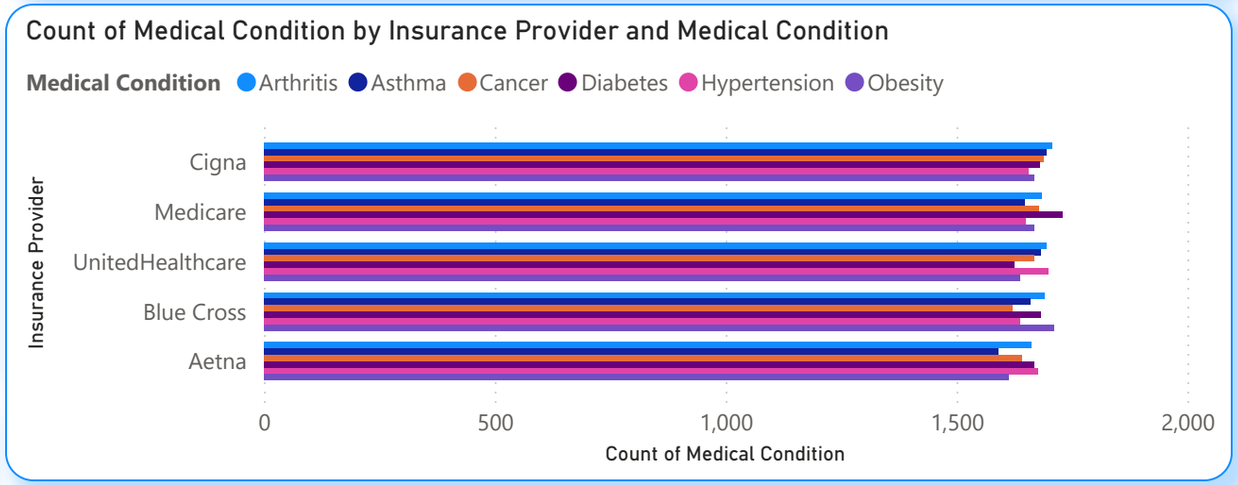
Resources Utilization

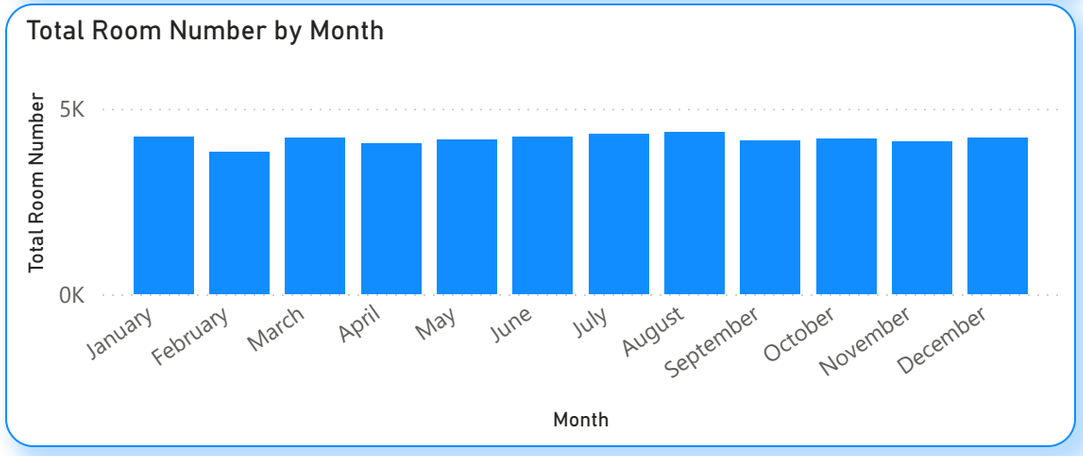
Room Number	Number patient
104	160
420	160
393	156
491	155
209	154
Total	**50000**











Treatment Outcome and Department Performance

40.24K	25.56K	66.87K	457.96K	619.06K
No. of Patients	Average of Billing Amount	Sum of Lab Cost in $	Sum of Consultation Revenue in $	Sum of Medication Revenue

Normal Test Results

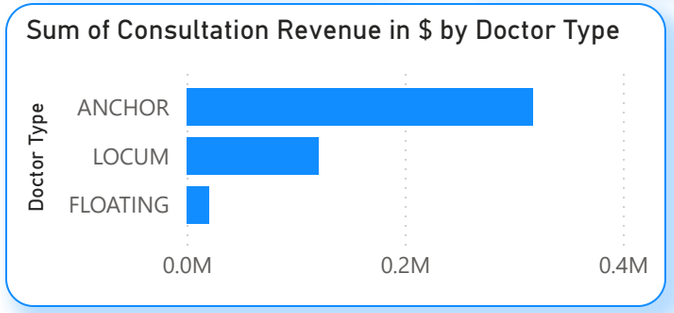
Medical Condition	Aspirin	Ibuprofen	Lipitor	Paracetamol	Penicillin	Total
Asthma	562	571	552	582	587	285
Hypertension	590	586	520	557	556	280
Diabetes	561	567	561	518	580	278
Cancer	541	558	578	549	520	274
Obesity	567	532	538	542	567	274
Arthritis	547	524	563	561	547	274
Total	**3368**	**3338**	**3312**	**3309**	**3357**	**1668**

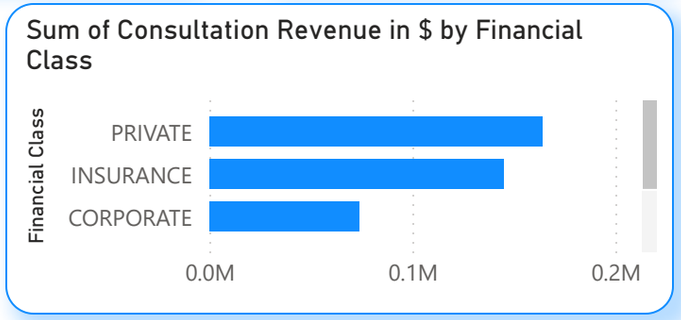
Abnormal Test Results

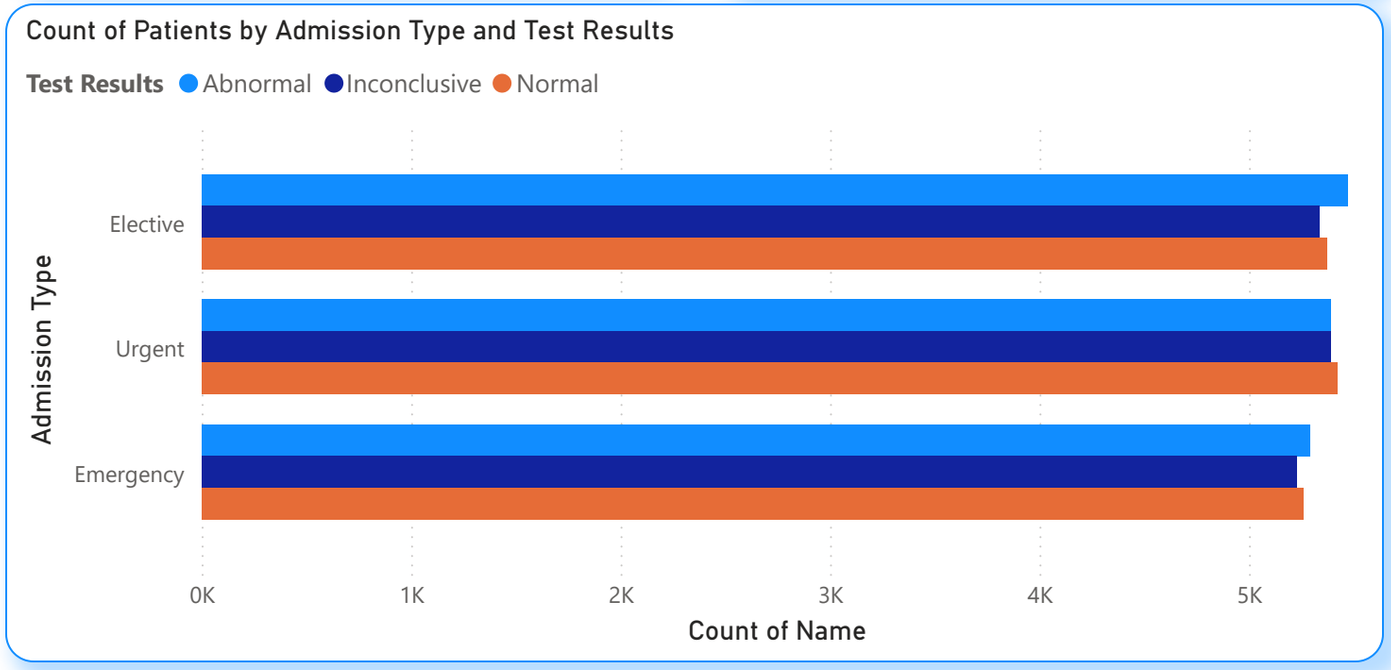
Medical Condition	Aspirin	Ibuprofen	Lipitor	Paracetamol	Penicillin	Total
Arthritis	608	582	535	603	580	**2908**
Asthma	514	529	564	541	549	**2697**
Cancer	550	576	559	563	549	**2797**
Diabetes	564	570	589	561	547	**2831**
Hypertension	555	540	548	561	517	**2721**
Obesity	568	573	546	538	593	**2818**
Total	**3359**	**3370**	**3341**	**3367**	**3335**	**16772**

Inconclusive Test Results

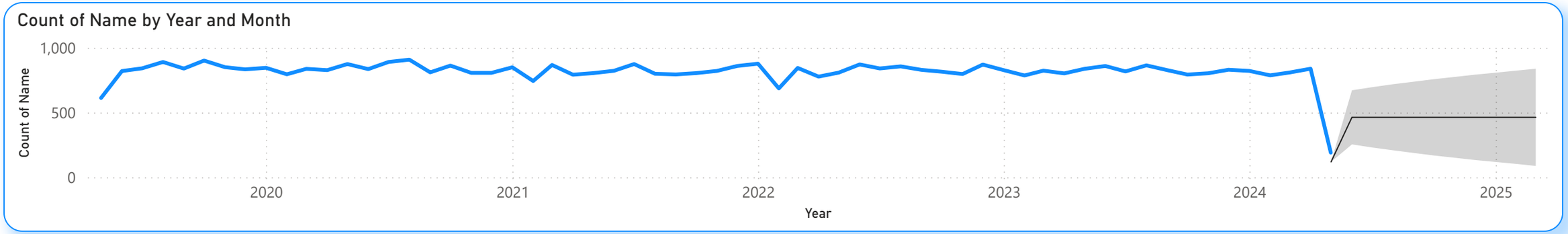
Medical Condition	Aspirin	Ibuprofen	Lipitor	Paracetamol	Penicillin	Total
Arthritis	578	554	565	534	558	**2789**
Asthma	543	520	533	582	543	**2721**
Cancer	516	549	588	557	541	**2751**
Diabetes	556	542	552	548	568	**2766**
Hypertension	538	570	590	551	540	**2789**
Obesity	534	560	551	530	553	**2728**
Total	**3265**	**3295**	**3379**	**3302**	**3303**	**16544**

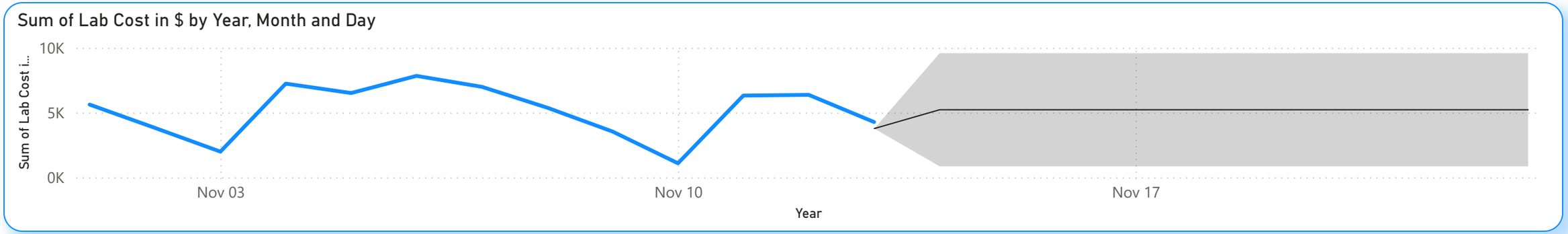


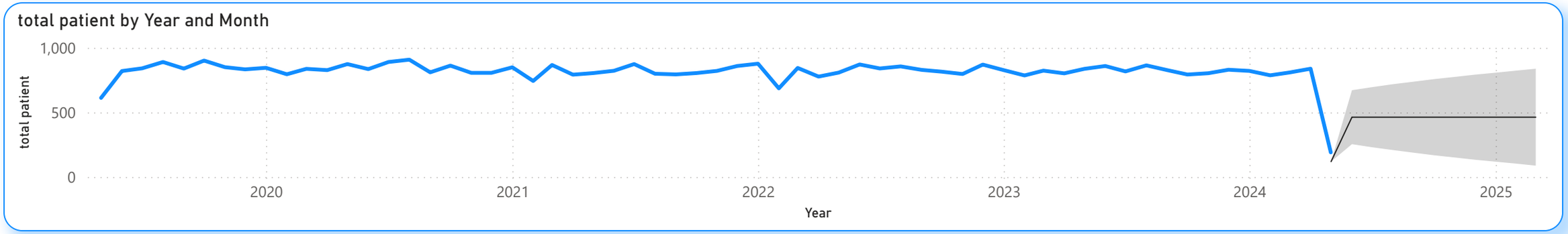




Forecasting







Patient Care Summary

August in Admission Type Urgent made up 2.97% of patients.

Elective had the highest average patients at 1,389.50, followed by Urgent at 1,384.92 and Emergency at 1,350.33.

patient for Female (21,897) was higher than Male (21,809).

At 8,019, Arthritis had the highest patient and was 2.32% higher than Asthma, which had the lowest patient at 7,837.

Across all 6 Medical Condition, patient ranged from 7,837 to 8,019.

Medicare accounted for 20.17% of Sum of Billing Amount.

Resources Utilizations

patient was highest for Michael Smith at 24, followed by John Smith and Michael Johnson.

Across all 40,341 Doctor, patient ranged from 1 to 24.

ANCHOR accounted for 73.05% of Count of Patient ID.

Medicare in Medical Condition Diabetes made up 3.46% of Count of Medical Condition.

Treatment Outcomes and Department Performance:

Elective in Test Results Abnormal made up 11.36% of Count of Name.

Abnormal had the highest average Count of Name at 5384, followed by Normal at 5,350.67 and Inconclusive at 5318.

At 317,329.27, ANCHOR had the highest Sum of Consultation Revenue in $ and was 1,466.12% higher than FLOATING, which had the lowest Sum of Consultation Revenue in $ at 20,262.11.

ANCHOR had the highest Sum of Consultation Revenue in $ at 317,329.27, followed by LOCUM at 120,367.41 and FLOATING at 20,262.11.

ANCHOR accounted for 69.29% of Sum of Consultation Revenue in $.

ANCHOR had 317,329.27 Sum of Consultation Revenue in $, LOCUM had 120,367.41, and FLOATING had 20,262.11.

Based on the data analysis and visual insights, here are some targeted recommendations for improving hospital operations, resource utilization, and treatment outcomes:

1. Admission Type and Patient Care Management

- ***Optimize Resource Allocation for Elective and Urgent Admissions:*** Since **Elective admissions** have the highest patient volume, with **Urgent admissions** close behind, consider allocating additional resources, staff, and time slots to manage high-demand periods effectively.

- ***Strengthen Emergency Care Protocols:*** Although Emergency admissions are slightly lower in average volume, it's essential to maintain and possibly expand capacity and readiness in this department to handle unpredictable surges in critical cases.

- ***Gender-Specific Healthcare Initiatives:*** With nearly equal numbers of female (21,897) and male (21,809) patients, the hospital should ensure that facilities, staff training, and outreach programs are balanced and cater to specific health needs for both genders.

2. Chronic Condition Management for Improved Patient Care

- ***Focus on Arthritis and Asthma Management:*** Arthritis, with the highest patient count at 8,019, should be prioritized in patient care programs, including preventative care, follow-up visits, and specialized support. Additionally, since Asthma patients are the lowest count, the hospital may consider assessing whether current care methods are adequately meeting patient needs or if outreach for this condition could be improved.

3. Insurance and Billing Optimization

- ***Increase Efficiency in Medicare Billing:*** As Medicare accounts for 20.17% of the total billing amount, it's recommended to improve billing procedures for Medicare patients, such as streamlined claim submissions and efficient cost tracking. Enhancing the process may reduce billing delays and improve cash flow.

4. Resource Utilization Improvements

- ***Address High Patient Load on Specific Doctors:*** With Dr. Michael Smith handling the highest patient load (24), it may be beneficial to distribute the patient load more evenly or provide additional support staff to manage care quality and reduce burnout.

- ***Optimize Doctor Roles and Responsibilities***: The **ANCHOR doctor type**, managing over 73% of patient cases, indicates a high dependency. Consider diversifying patient assignments to other doctor types like LOCUM and FLOATING to reduce the strain on ANCHOR doctors and ensure balanced service delivery.

5. Targeted Interventions for High-Risk Conditions and Medicare Cases

- ***Medicare for Diabetes Patients:*** Since Medicare accounts for a notable percentage (3.46%) of diabetes cases, efforts should focus on strengthening diabetic patient support under Medicare. Specialized care