National Telecommunication Institute

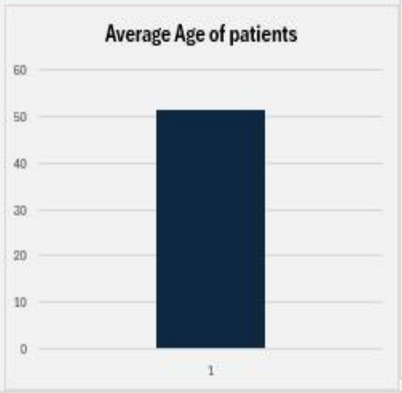
PRESENTATION

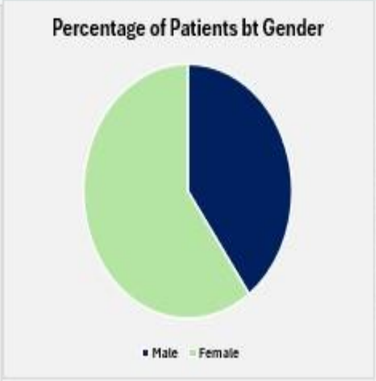
Medical Healthcare

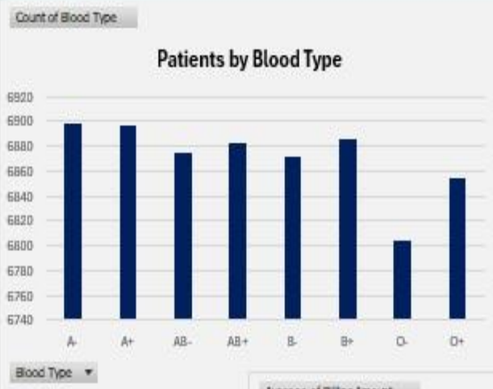
By: Hesham Elwakeel

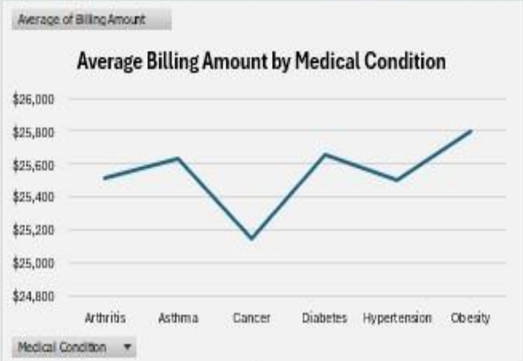
Final Dashboard

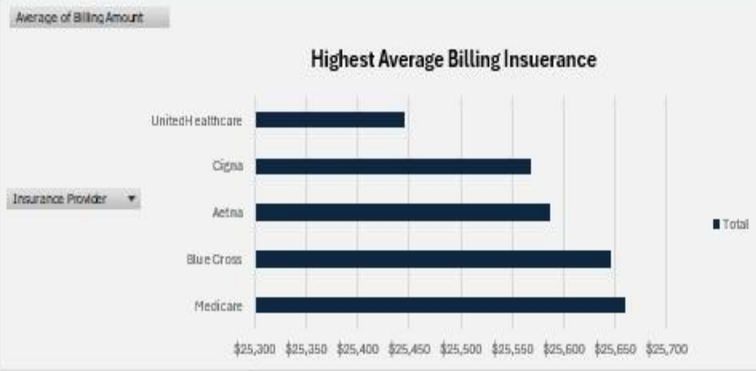
Medical Healthcare

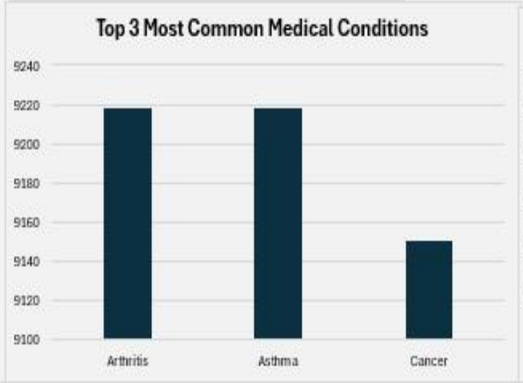


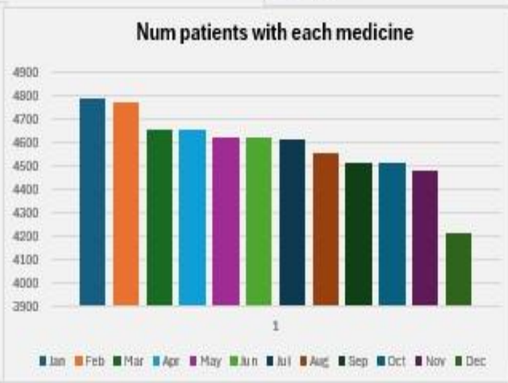


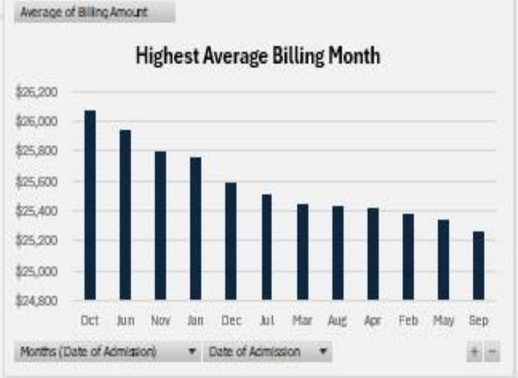


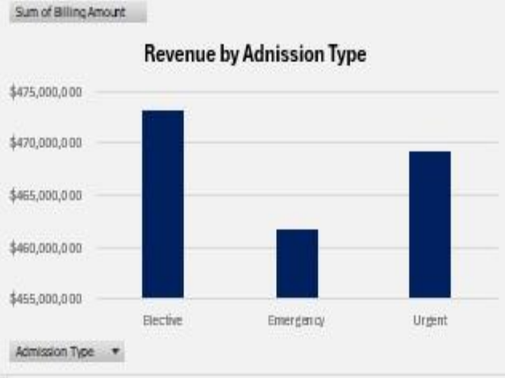


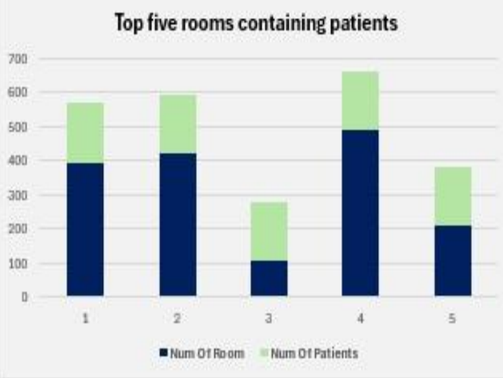


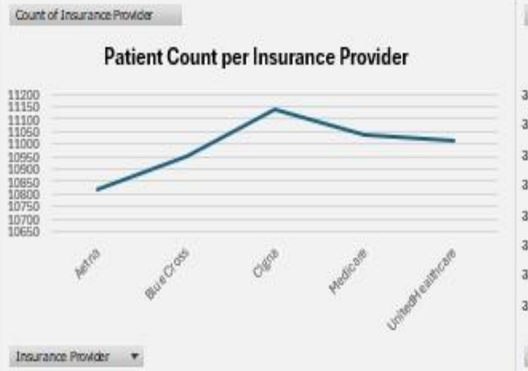


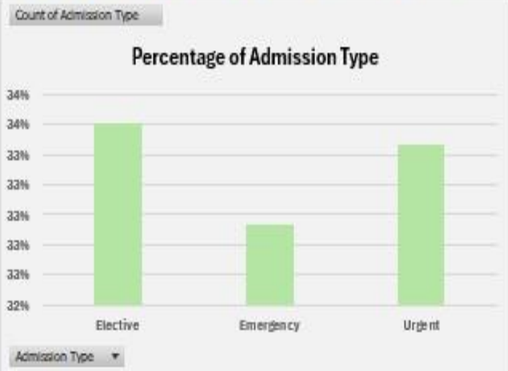


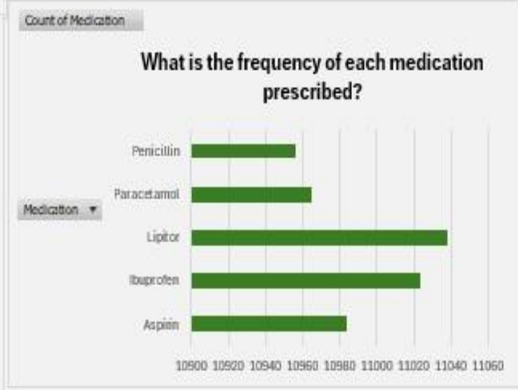


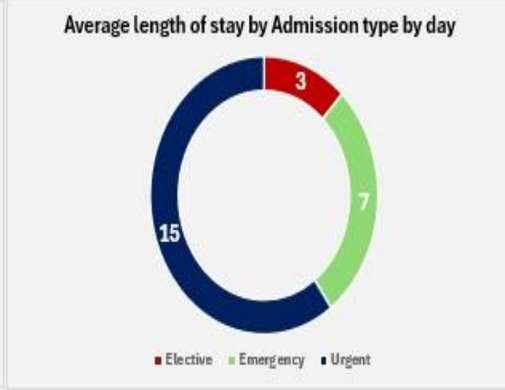












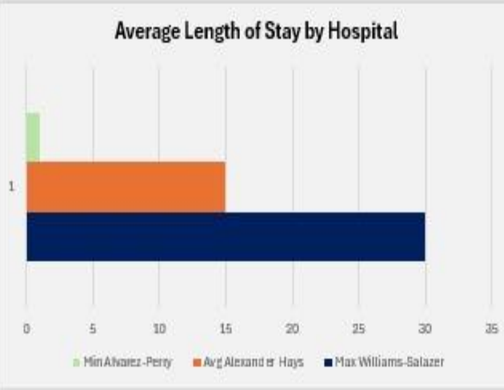


Table of contents

Business Understanding

The Business Problem focuses on understanding and improving hospital performance, identifying high performance hospital, and ultimately improving patient care and operational efficiency

Datasets

kaggle

55,000 Record

15 Fields

Data Preview

Name	Age	Gender	Blood Type	Medical Condition	Date of Admission	Doctor	Hospital	Insurance Provider	Billing Amount	Room Number	Admission Type	Discharge Date
Bobby JacksOn	30	Male	B-	Cancer	1/31/2024	Matthew Smith	Sons and Miller	Blue Cross	18856.28131	328	Urgent	2/2/2024
LesLie TErRy	62	Male	A+	Obesity	8/20/2019	Samantha Davies	Kim Inc	Medicare	33643.32729	265	Emergency	8/26/2019
DaNnY sMitH	76	Female	A-	Obesity	9/22/2022	Tiffany Mitchell	Cook PLC	Aetna	27955.09608	205	Emergency	10/7/2022
andrEw waTtS	28	Female	O+	Diabetes	11/18/2020	Kevin Wells	Hernandez Rogers and Vang,	Medicare	37909.78241	450	Elective	12/18/2020
adrIENNE bEll	43	Female	AB+	Cancer	9/19/2022	Kathleen Hanna	White-White	Aetna	14238.31781	458	Urgent	10/9/2022
EMILY JOHNSOn	36	Male	A+	Asthma	12/20/2023	Taylor Newton	Nunez-Humphrey	UnitedHealthcare	48145.11095	389	Urgent	12/24/2023
edwArD EDWaRDs	21	Female	AB-	Diabetes	11/3/2020	Kelly Olson	Group Middleton	Medicare	19580.87234	389	Emergency	11/15/2020
CHrisTInA MARtinez	20	Female	A+	Cancer	12/28/2021	Suzanne Thomas	Powell Robinson and Valdez,	Cigna	45820.46272	277	Emergency	1/7/2022
JASmINe aGullaR	82	Male	AB+	Asthma	7/1/2020	Daniel Ferguson	Sons Rich and	Cigna	50119.22279	316	Elective	7/14/2020
ChRISTopher BerG	58	Female	AB-	Cancer	5/23/2021	Heather Day	Padilla-Walker	UnitedHealthcare	19784.63106	249	Elective	6/22/2021
mIchElLe daniELs	72	Male	O+	Cancer	4/19/2020	John Duncan	Schaefer-Porter	Medicare	12576.79561	394	Urgent	4/22/2020
aaRon MARtiNeZ	38	Female	A-	Hypertension	8/13/2023	Douglas Mayo	Lyons-Blair	Medicare	7999.58688	288	Urgent	9/5/2023
connOR HANsEn	75	Female	A+	Diabetes	12/12/2019	Kenneth Fletcher	Powers Miller, and Flores	Cigna	43282.28336	134	Emergency	12/28/2019
rObeRt bAuer	68	Female	AB+	Asthma	5/22/2020	Theresa Freeman	Rivera-Gutierrez	UnitedHealthcare	33207.70663	309	Urgent	6/19/2020
bROOkE brady	44	Female	AB+	Cancer	10/8/2021	Roberta Stewart	Morris-Arellano	UnitedHealthcare	40701.59923	182	Urgent	10/13/2021
MS. nAtallE gAMble	46	Female	AB-	Obesity	1/1/2023	Maria Dougherty	Cline-Williams	Blue Cross	12263.35743	465	Elective	1/11/2023
haley perkins	63	Female	A+	Arthritis	6/23/2020	Erica Spencer	Cervantes-Wells	UnitedHealthcare	24499.8479	114	Elective	7/14/2020
mRS. jamiE cAMPBELl	38	Male	AB-	Obesity	3/8/2020	Justin Kim	Torres, and Harrison Jones	Cigna	17440.46544	449	Urgent	4/2/2020
LuKE BuRgEss	34	Female	A-	Hypertension	3/4/2021	Justin Moore Jr.	Houston PLC	Blue Cross	18843.02302	260	Elective	3/14/2021
dANIEL schmIdt	63	Male	B+	Asthma	11/15/2022	Denise Galloway	Hammond Ltd	Cigna	23762.20358	465	Elective	11/22/2022
tIMOTHY burNs	67	Female	A-	Asthma	6/28/2023	Krista Smith	Jones LLC	Blue Cross	42.51458855	115	Elective	7/2/2023
ChRISToPHEr BRiGhT	48	Male	B+	Asthma	1/21/2020	Gregory Smith	Williams-Davis	Aetna	17695.91162	295	Urgent	2/9/2020
KatHRYn StewArt	58	Female	O+	Arthritis	5/12/2022	Vanessa Newton	Clark-Mayo	Aetna	5998.102908	327	Urgent	6/10/2022
dR. EilEEn thomPsoN	59	Male	A+	Asthma	8/2/2021	Donna Martinez MD	and Sons Smith	Aetna	25250.05243	119	Urgent	8/12/2021
PAUl hEndERsOn	72	Female	AB+	Hypertension	5/15/2020	Stephanie Kramer	Wilson Group	Medicare	33211.29542	109	Emergency	6/8/2020
PeTER fiTzgeRaLd	73	Male	AB+	Obesity	5/15/2020	Angela Contreras	Garner-Bowman	Medicare	19746.83201	162	Urgent	5/20/2020
cathy sMaLl	51	Female	O-	Asthma	12/23/2023	Wendy Glenn	Brown, and Jones Weaver	Blue Cross	26786.52956	401	Elective	1/19/2024

contents of Data

Name	This column represents the name of the patient associated with the healthcare record.
Age	The age of the patient at the time of admission, expressed in years.
Gender	Indicates the gender of the patient, either "Male" or "Female."
Blood Type	The patient's blood type, which can be one of the common blood types (e.g., "A+", "O-", etc.).
Medical Condition	This column specifies the primary medical condition or diagnosis associated with the patient, such as "Diabetes," "Hypertension," "Asthma," and more.
Date of Admission	The date on which the patient was admitted to the healthcare facility.
Doctor	The name of the doctor responsible for the patient's care during their admission.

Contents of Data

Hospital	Identifies the healthcare facility or hospital where the patient was admitted.
Insurance Provider	This column indicates the patient's insurance provider, which can be one of several options, including "Aetna," "Blue Cross," "Cigna," "UnitedHealthcare," and "Medicare."
Billing Amount	The amount of money billed for the patient's healthcare services during their admission. This is expressed as a floating-point number.
Room Number	The room number where the patient was accommodated during their admission.
Admission Type	Specifies the type of admission, which can be "Emergency," "Elective," or "Urgent," reflecting the circumstances of the admission.
Discharge Date	The date on which the patient was discharged from the healthcare facility, based on the admission date and a random number of days within a realistic range.
Medication	Identifies a medication prescribed or administered to the patient during their admission. Examples include "Aspirin," "Ibuprofen," "Penicillin," "Paracetamol," and "Lipitor."

Data Cleaning

Data Cleaning

Handling outliers and Nulls

Column EX: (Billing Amount, Age)
To handle that I used (Averages, Mode and IQR)

Removing Duplicates

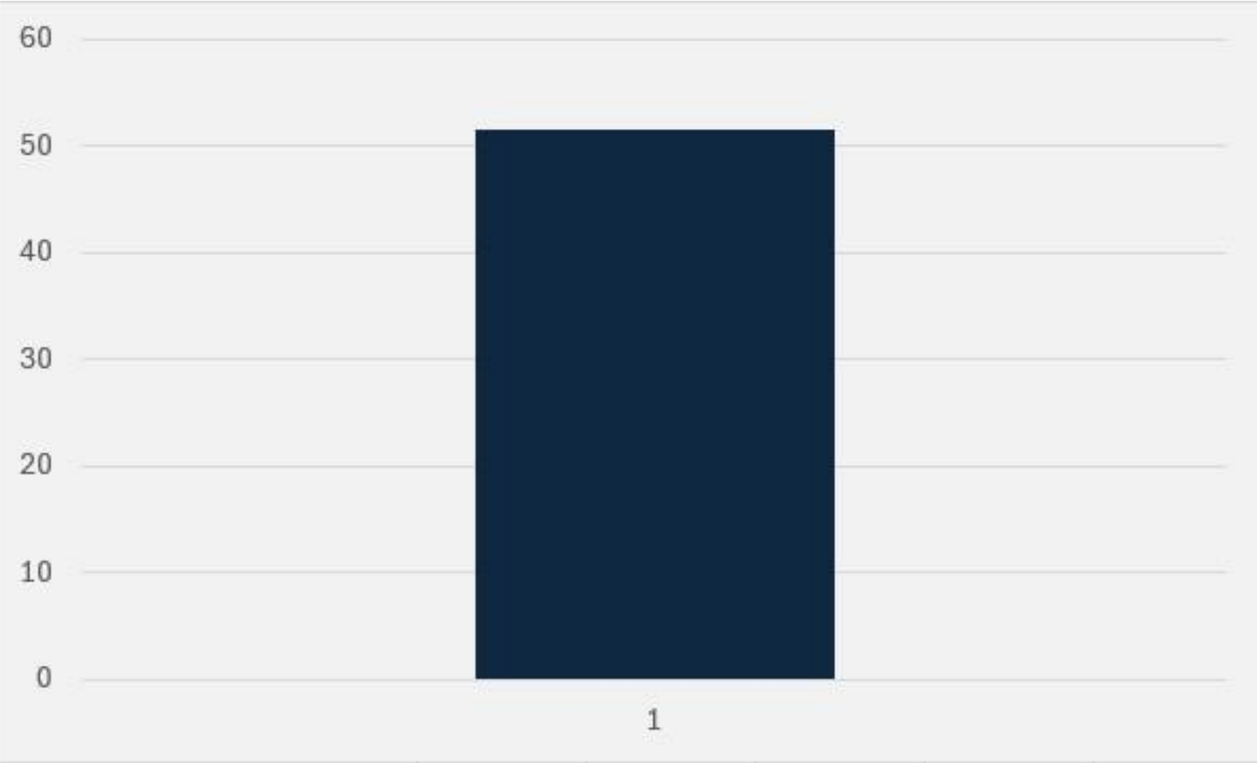
Column EX: (patients, Hospital)

Feature Engineering

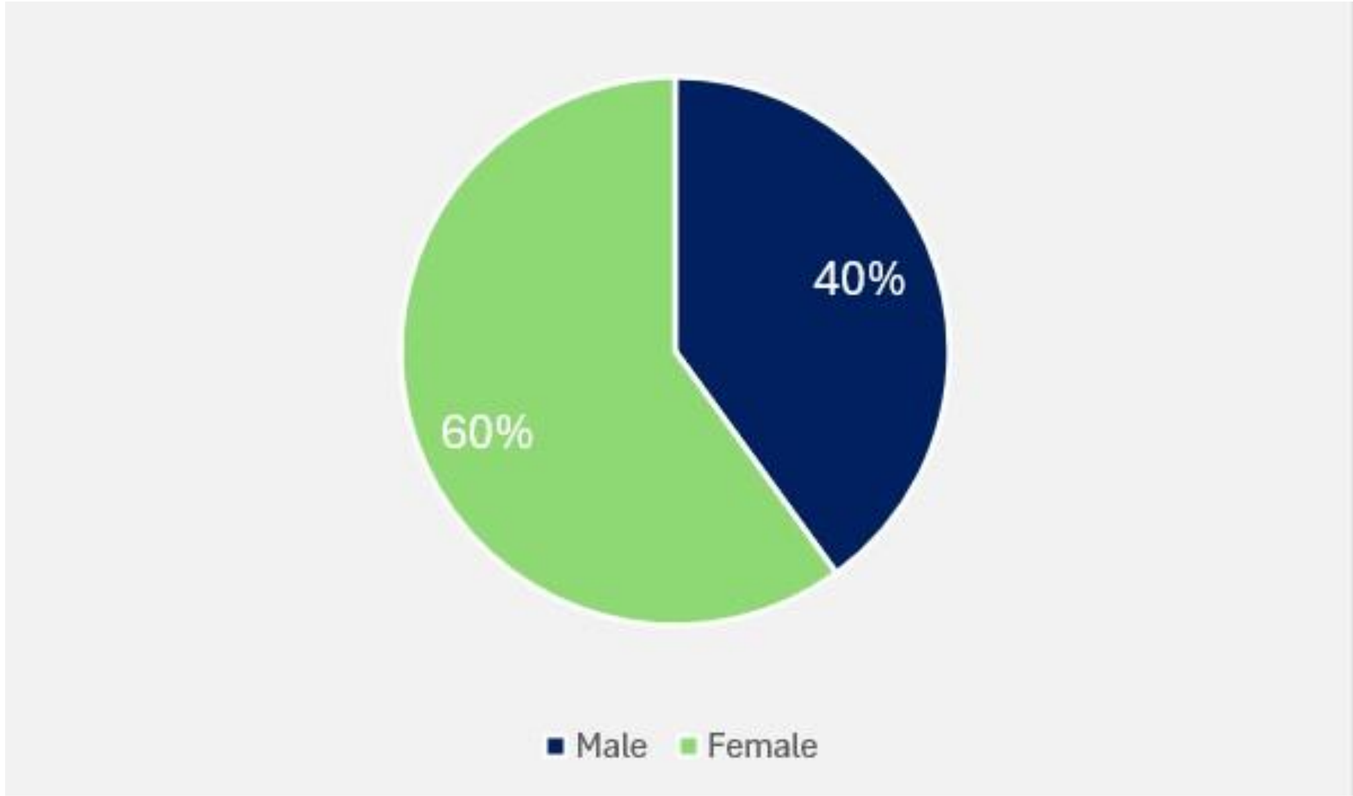
Column EX: (patients, Date)

The date is divided into months only.

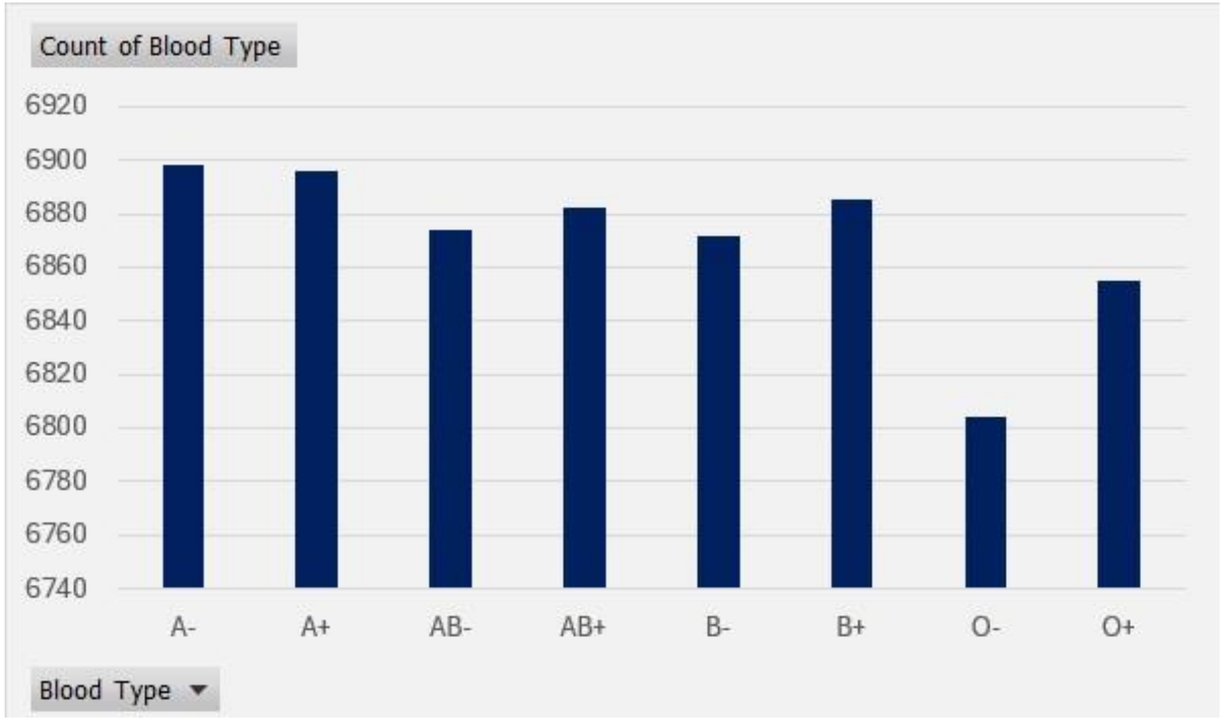
Average Age of Patients

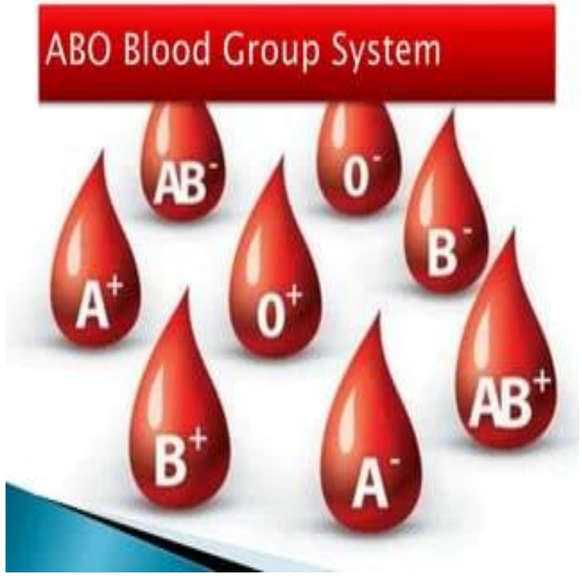


Percentage of Patients by Gender

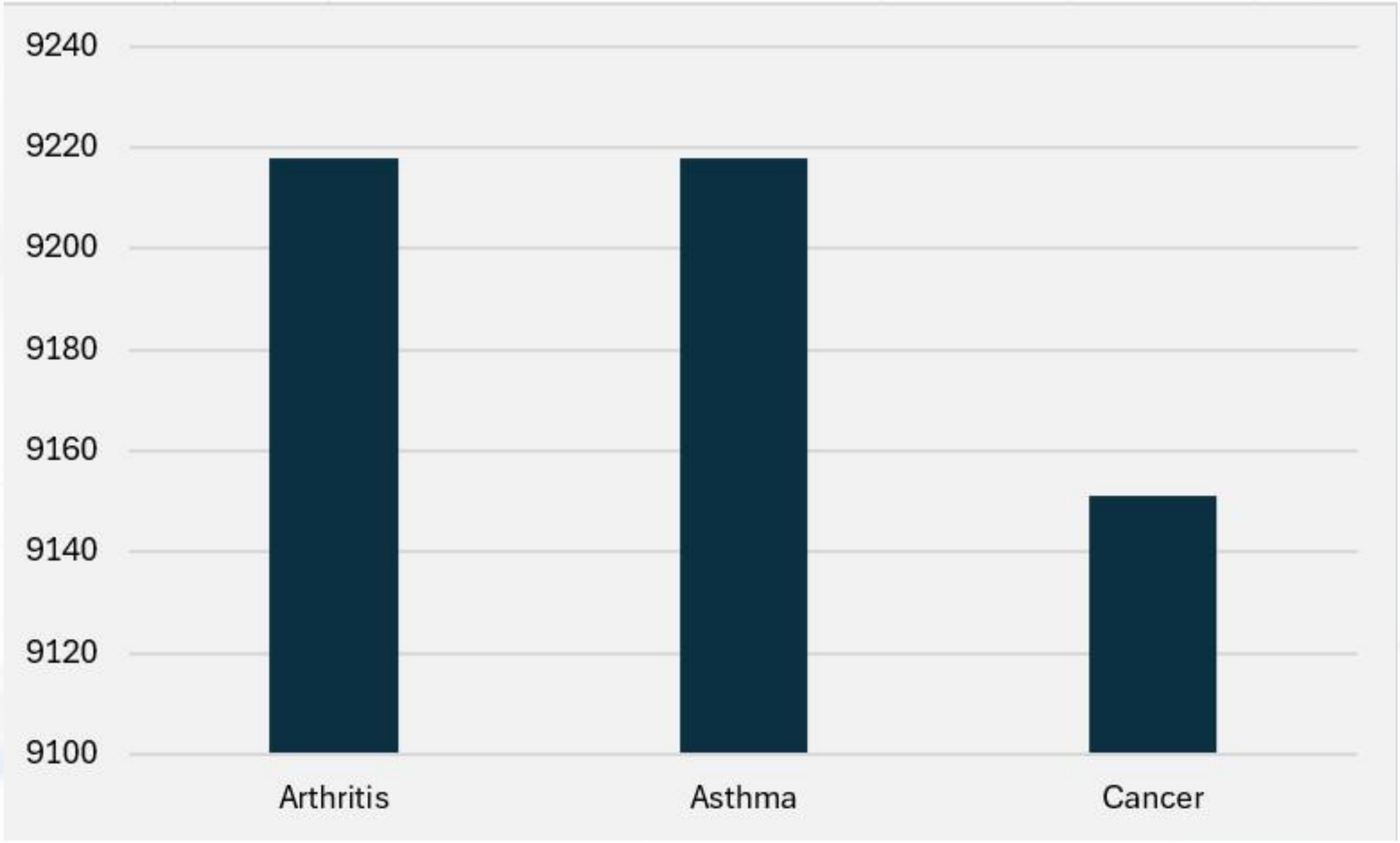


Patients by Blood Type

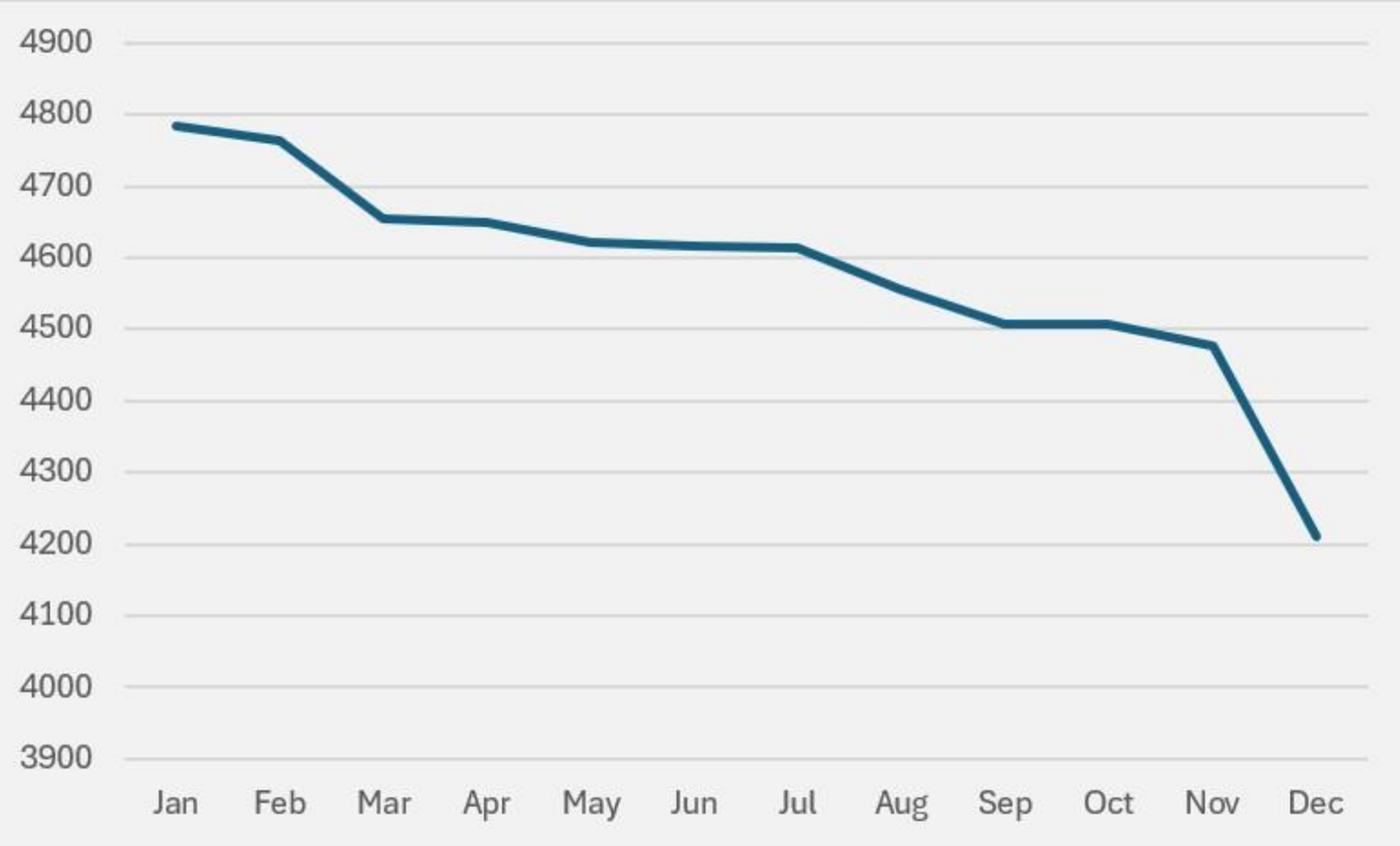




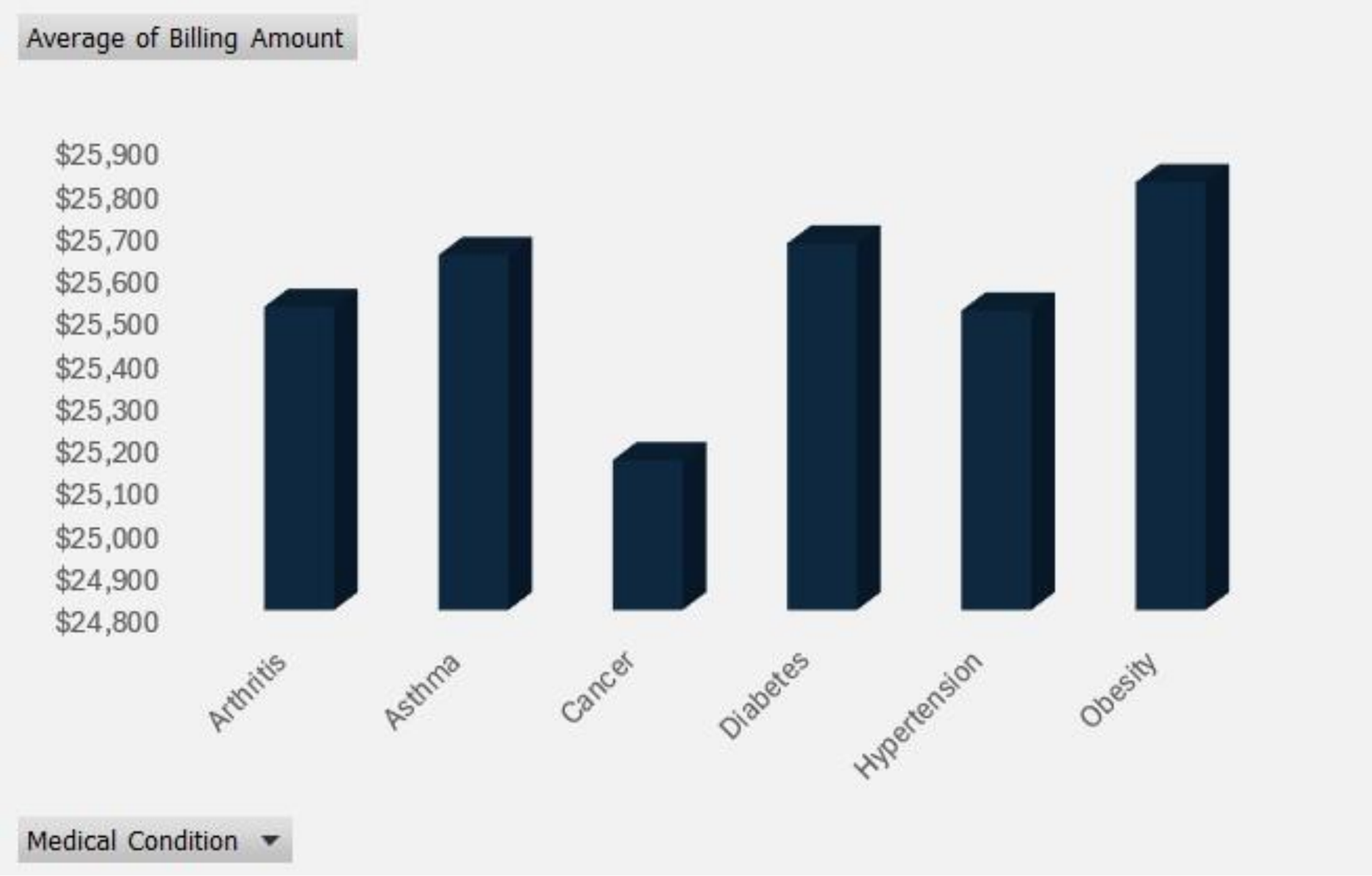
Top 3 Most Medical Conditions



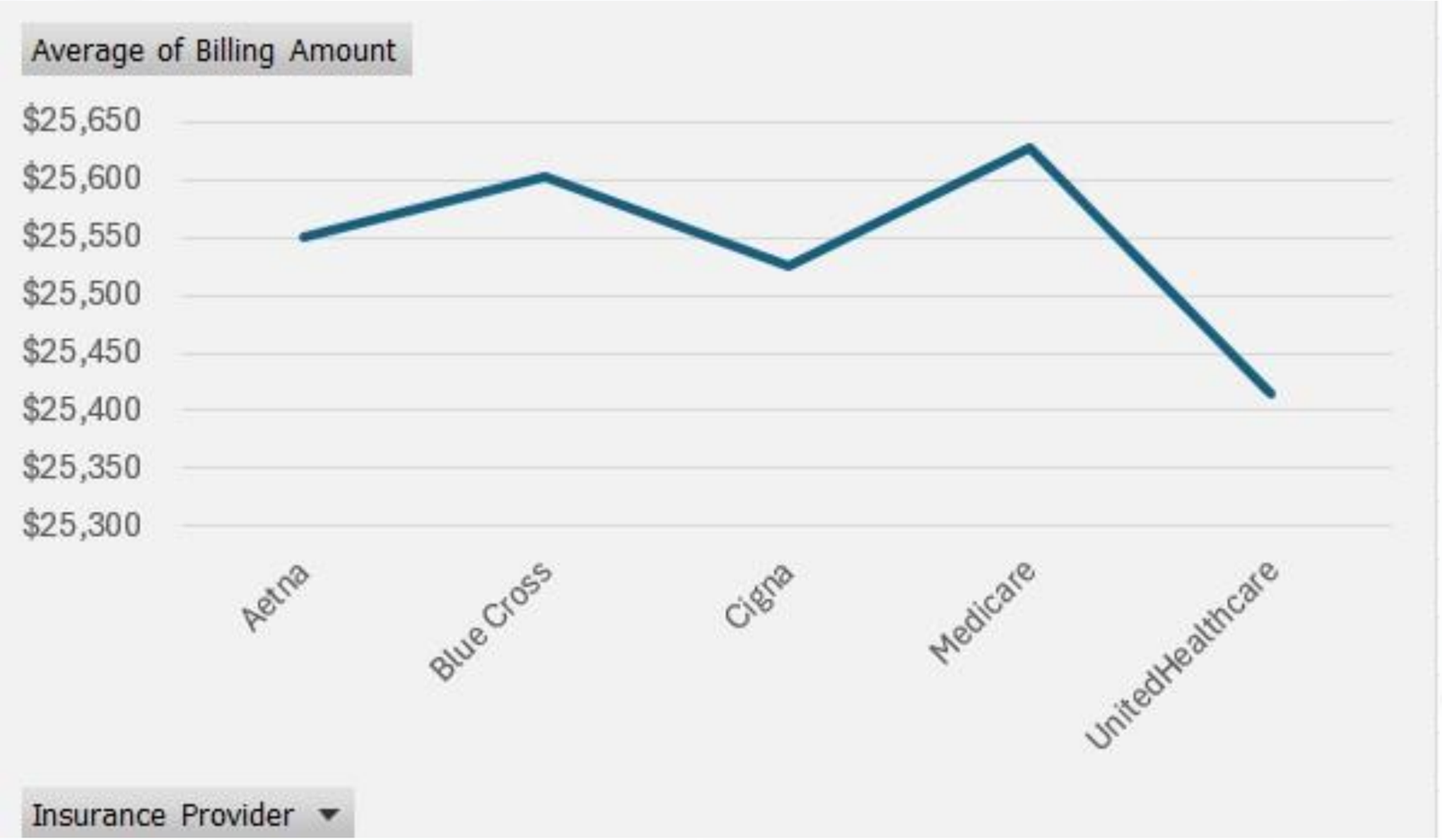
Num of Patients for each month



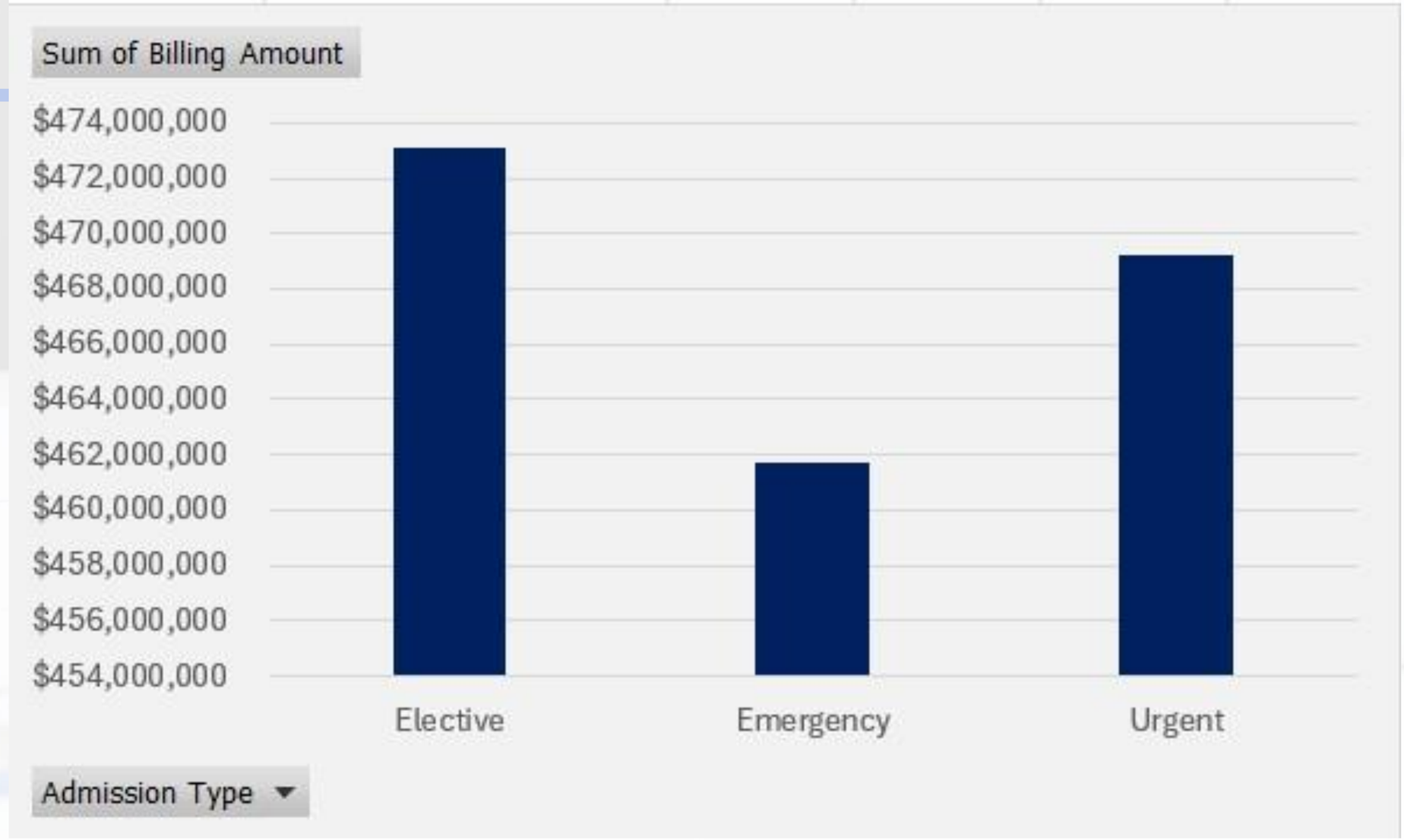
Average Billing Amount by Medical Conditions



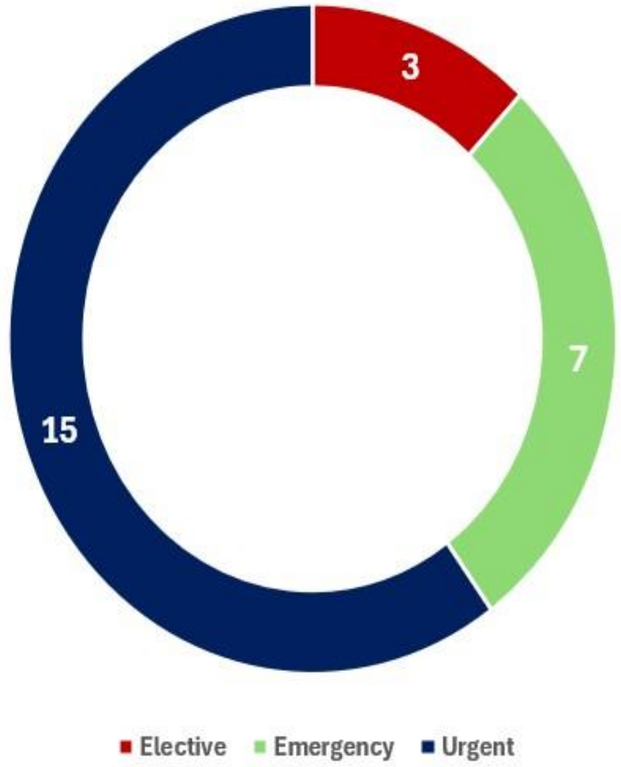
Average Billing Insurance Providers



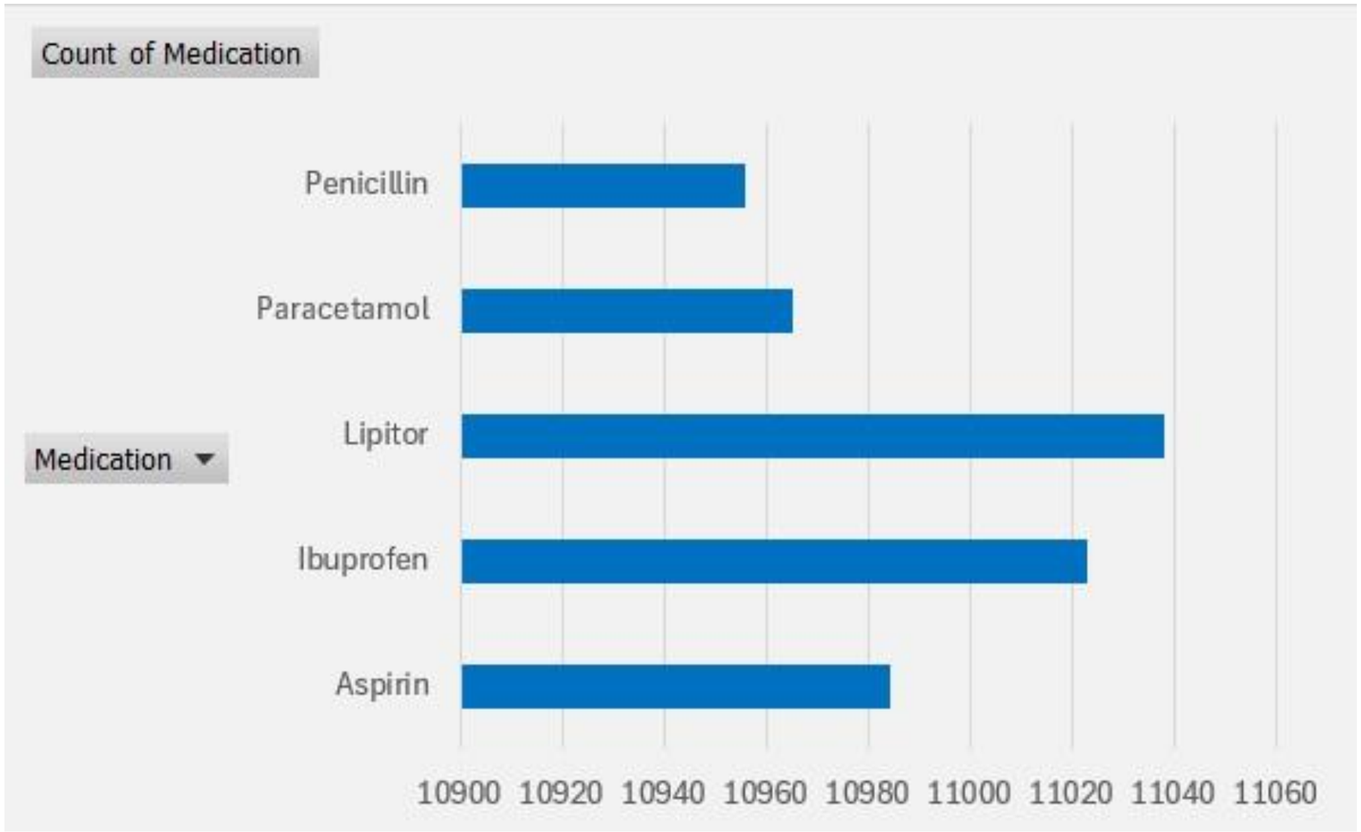
Revenue by Admission Type



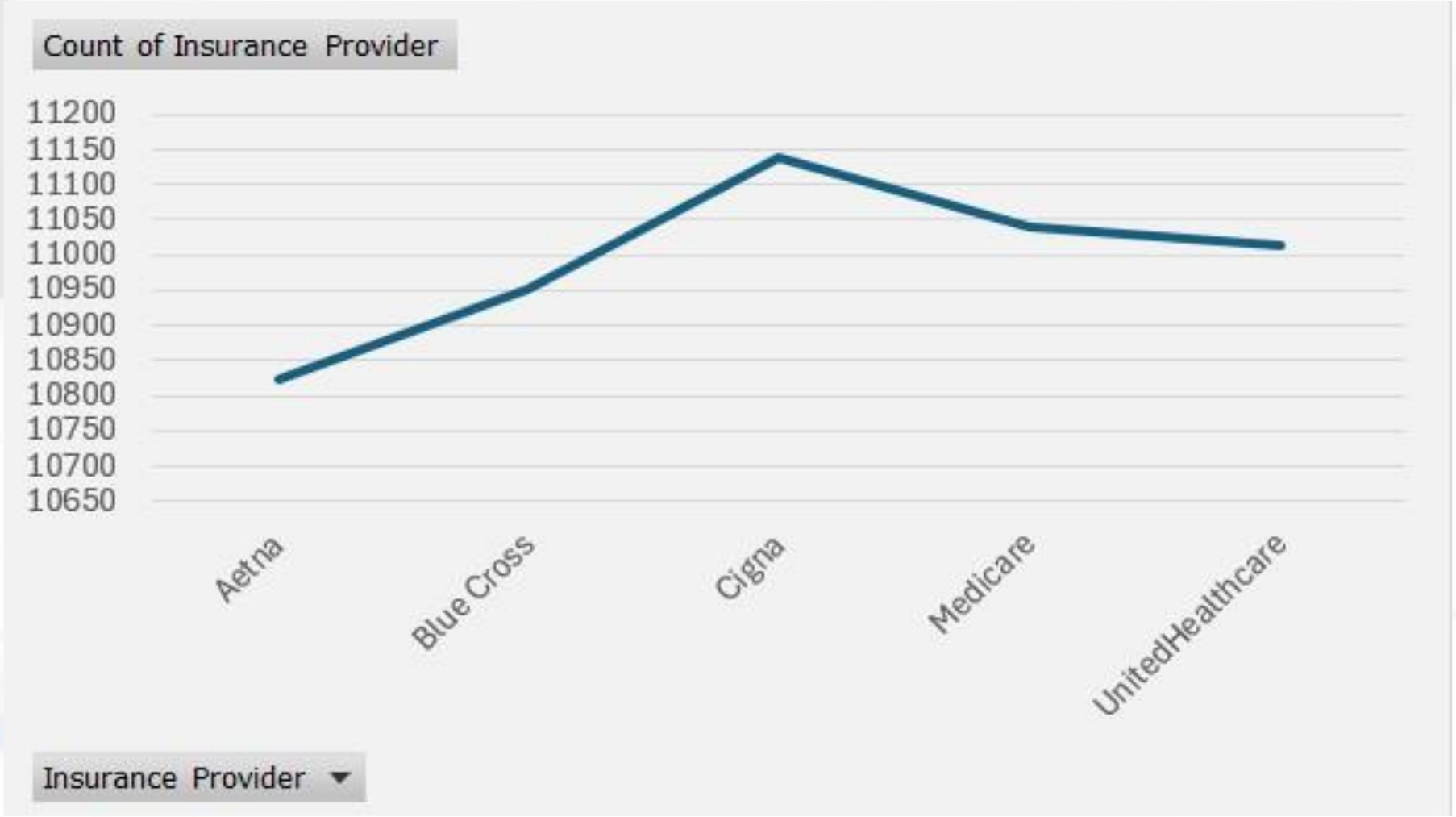
Average length stay (day) by Admission type



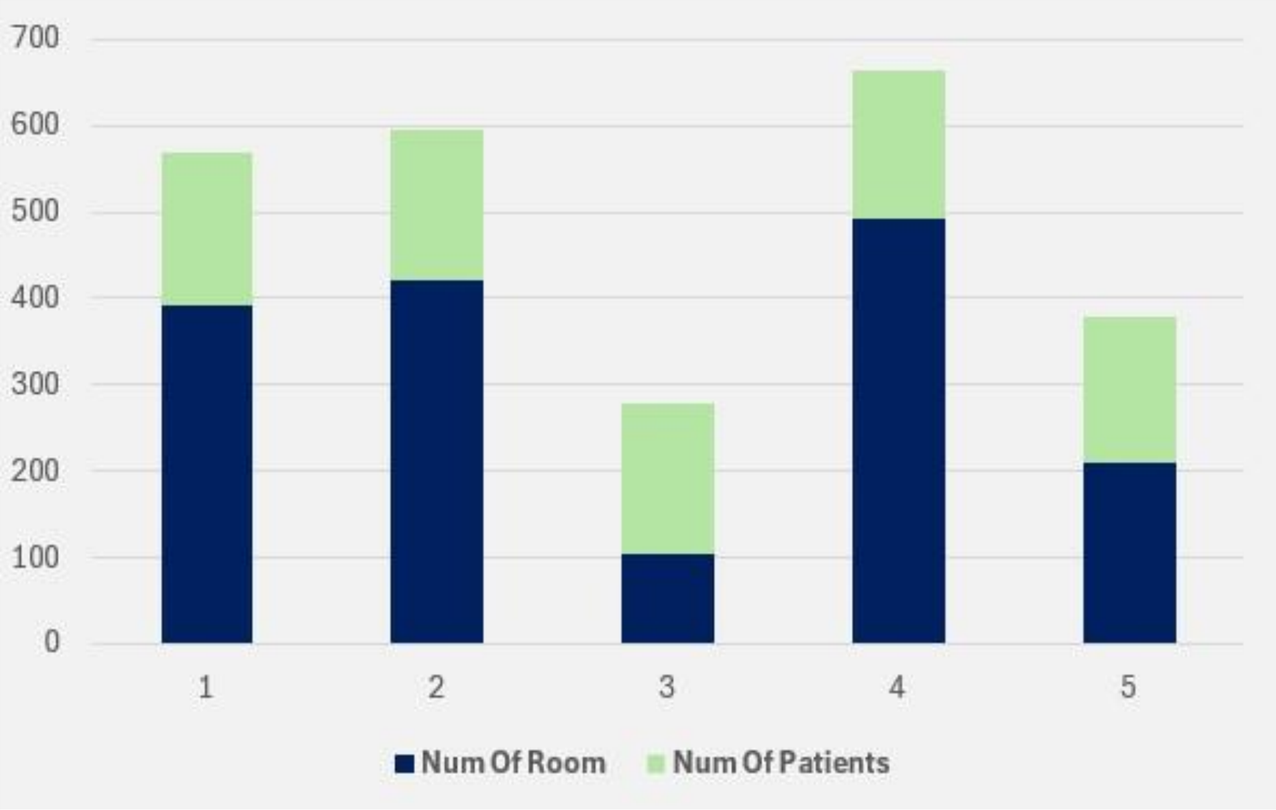
What is the frequency of each medicine prescribed



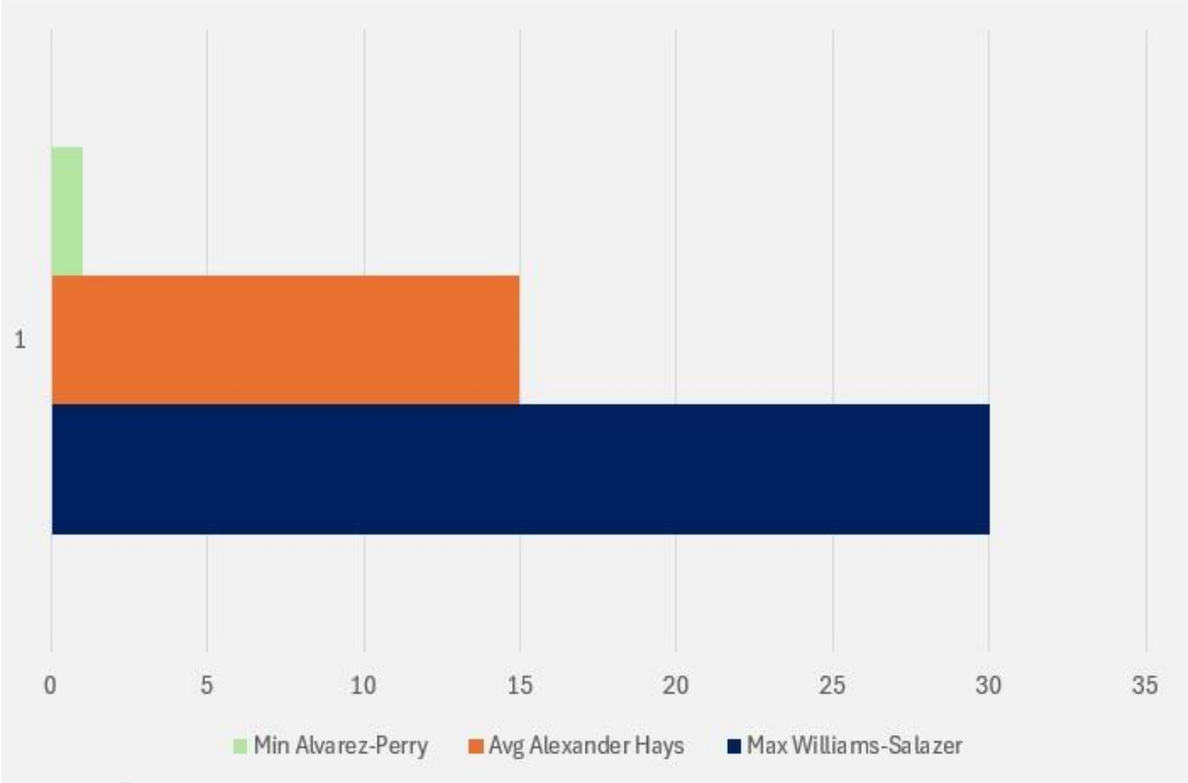
Patients count per Insurance Provider



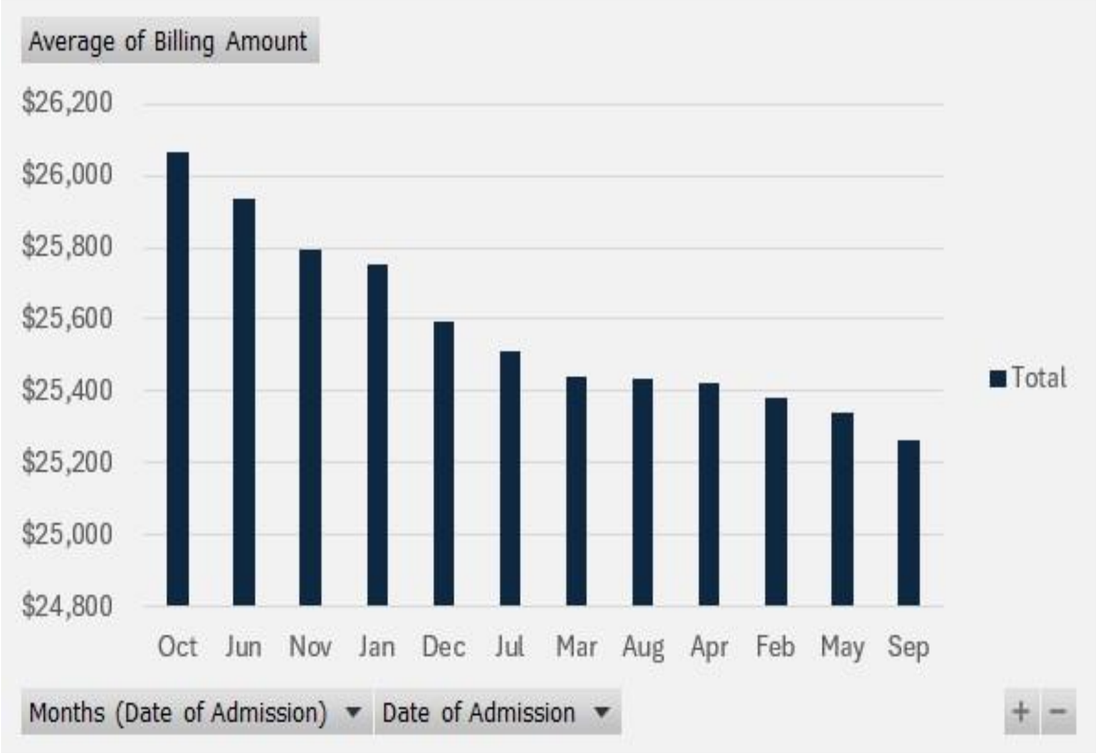
Top 5 Rooms Containing Patients

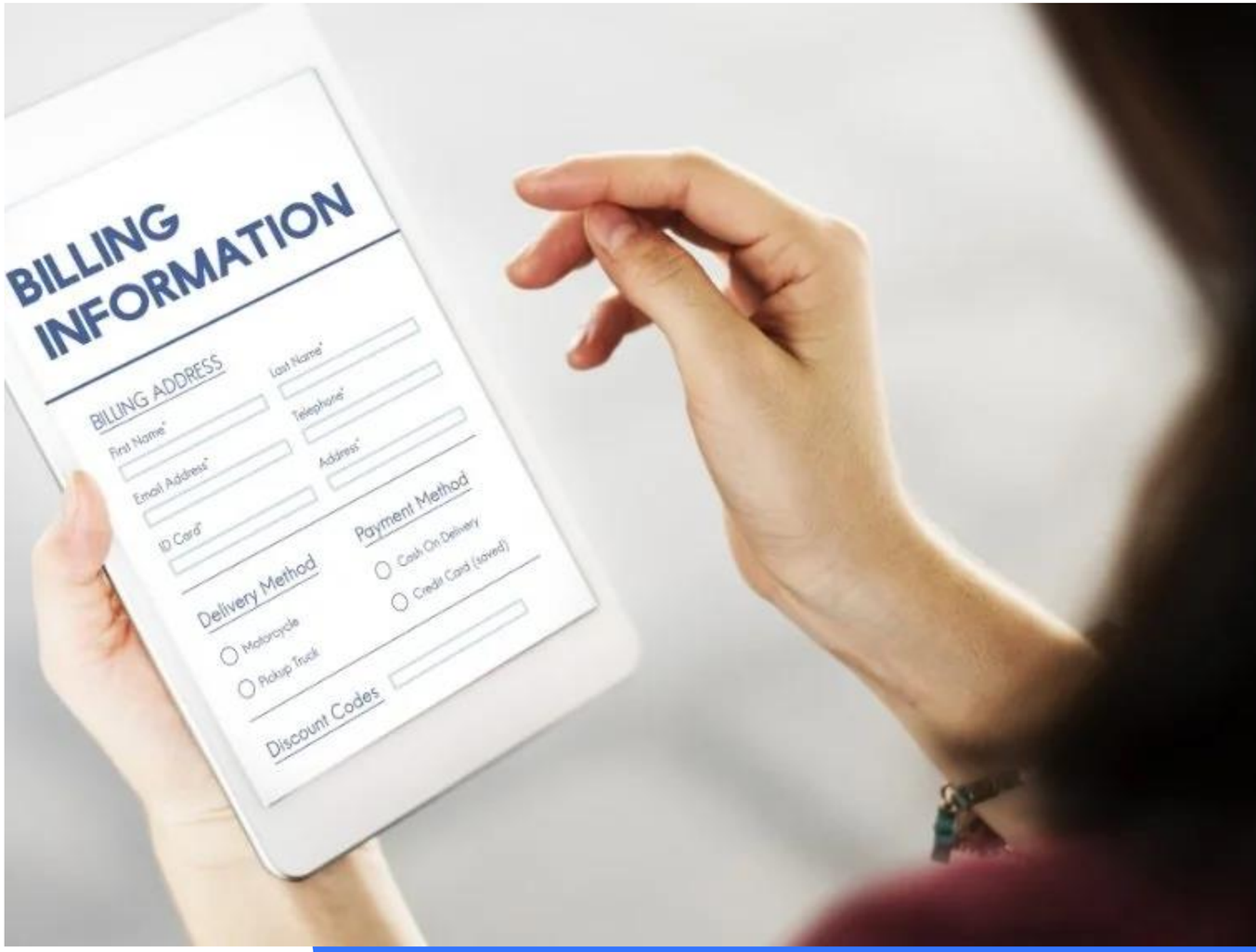


Average length of stay in Hospital



Highest Average Billing Per Month





Recommendations

Resource Optimization

- Based on admission trends, allocate resources strategically during peak admission periods to improve patient wait times and care quality.

Preventative Care Initiatives

- Increase focus on common conditions like Arthritis and Asthma, as identified in the data, to implement preventive care programs that can reduce hospital admissions over time.

Preventative Care Initiatives

- Continue to use data analytics as a foundational tool to monitor and improve hospital performance, focusing on key metrics that drive patient satisfaction and operational efficiency.

Conclusion

This dataset provides an overview of patient admissions across various hospitals, capturing key aspects such as patient demographics, medical conditions, admission types, and billing amounts. It includes detailed information on factors like the attending doctors, room assignments, and insurance providers, as well as test results and medication data. This comprehensive view allows us to Analyze patterns in hospital utilization, patient needs, and billing variations. By examining these metrics, we aim to gain insights that will inform decisions on resource allocation, identify high-performing hospitals, and ultimately improve patient care and operational efficiency."

Thank You.

For Your Attention