Hospital Analysis and Review

TEAM BETA

(Chris Lane, Sae Park, Rosy Matthews, Sara Bendahmane, Andre Brantoro, Donald Sparks III, ADonate Hunt, Matthew Shea, Jackson Wilhovsky, Alma Ontiveros)

12/5/24

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Name	Age	Gender	Blood Type	Medical Condition	Date of Admission	Doctor	Hospital	Insurance Provider	Billing Amount	Room Number	Admission Type	Discharge Date	Medication	Test Results
2	Bobby JacksOn	30	Male	B-	Cancer	1/31/2024	Matthew Smith	Sons and Miller	Blue Cross	18856.28131	328	Urgent	2/2/2024	Paracetamol	Normal
3	LesLie TErRy	62	Male	A+	Obesity	8/20/2019	Samantha Davies	Kim Inc	Medicare	33643.32729	265	Emergency	8/26/2019	Ibuprofen	Inconclusive
4	DaNnY sMitH	76	Female	A-	Obesity	9/22/2022	Tiffany Mitchell	Cook PLC	Aetna	27955.09608	205	Emergency	10/7/2022	Aspirin	Normal
5	andrEw waTtS	28	Female	O+	Diabetes	11/18/2020	Kevin Wells	Hernandez Rogers and Vang,	Medicare	37909.78241	450	Elective	12/18/2020	Ibuprofen	Abnormal
6	adrIENNE bEll	43	Female	AB+	Cancer	9/19/2022	Kathleen Hanna	White-White	Aetna	14238.31781	458	Urgent	10/9/2022	Penicillin	Abnormal
7	EMILY JOHNSOn	36	Male	A+	Asthma	12/20/2023	Taylor Newton	Nunez-Humphrey	UnitedHealthcare	48145.11095	389	Urgent	12/24/2023	Ibuprofen	Normal
8	edwArD EDWaRDs	21	Female	AB-	Diabetes	11/3/2020	Kelly Olson	Group Middleton	Medicare	19580.87234	389	Emergency	11/15/2020	Paracetamol	Inconclusive
9	CHrisTInA MARtinez	20	Female	A+	Cancer	12/28/2021	Suzanne Thomas	Powell Robinson and Valdez,	Cigna	45820.46272	277	Emergency	1/7/2022	Paracetamol	Inconclusive
10	JASmINe aGuIlaR	82	Male	AB+	Asthma	7/1/2020	Daniel Ferguson	Sons Rich and	Cigna	50119.22279	316	Elective	7/14/2020	Aspirin	Abnormal
11	ChRISTopher BerG	58	Female	AB-	Cancer	5/23/2021	Heather Day	Padilla-Walker	UnitedHealthcare	19784.63106	249	Elective	6/22/2021	Paracetamol	Inconclusive
12	mIchElLe daniELs	72	Male	O+	Cancer	4/19/2020	John Duncan	Schaefer-Porter	Medicare	12576.79561	394	Urgent	4/22/2020	Paracetamol	Normal
13	aaRon MARtiNeZ	38	Female	A-	Hypertension	8/13/2023	Douglas Mayo	Lyons-Blair	Medicare	7999.58688	288	Urgent	9/5/2023	Lipitor	Inconclusive
14	connOR HANsEn	75	Female	A+	Diabetes	12/12/2019	Kenneth Fletcher	Powers Miller, and Flores	Cigna	43282.28336	134	Emergency	12/28/2019	Penicillin	Abnormal
15	rObeRt bAuer	68	Female	AB+	Asthma	5/22/2020	Theresa Freeman	Rivera-Gutierrez	UnitedHealthcare	33207.70663	309	Urgent	6/19/2020	Lipitor	Normal
16	bROOkE brady	44	Female	AB+	Cancer	10/8/2021	Roberta Stewart	Morris-Arellano	UnitedHealthcare	40701.59923	182	Urgent	10/13/2021	Paracetamol	Normal
17	MS. nAtalIE gAMble	46	Female	AB-	Obesity	1/1/2023	Maria Dougherty	Cline-Williams	Blue Cross	12263.35743	465	Elective	1/11/2023	Aspirin	Inconclusive
18	haley perkins	63	Female	A+	Arthritis	6/23/2020	Erica Spencer	Cervantes-Wells	UnitedHealthcare	24499.8479	114	Elective	7/14/2020	Paracetamol	Normal
19	mRS. jamiE cAMPBELl	38	Male	AB-	Obesity	3/8/2020	Justin Kim	Torres, and Harrison Jones	Cigna	17440.46544	449	Urgent	4/2/2020	Paracetamol	Abnormal
20	LuKE BuRgEss	34	Female	A-	Hypertension	3/4/2021	Justin Moore Jr.	Houston PLC	Blue Cross	18843.02302	260	Elective	3/14/2021	Aspirin	Abnormal
21	dANIEL schmIdt	63	Male	B+	Asthma	11/15/2022	Denise Galloway	Hammond Ltd	Cigna	23762.20358	465	Elective	11/22/2022	Penicillin	Normal
22	tIMOTHY burNs	67	Female	A-	Asthma	6/28/2023	Krista Smith	Jones LLC	Blue Cross	42.51458855	115	Elective	7/2/2023	Aspirin	Normal
23	ChRISToPHEr BRiGhT	48	Male	B+	Asthma	1/21/2020	Gregory Smith	Williams-Davis	Aetna	17695.91162	295	Urgent	2/9/2020	Lipitor	Normal

Research Questions

1. What is the impact of a patient's information to their billing amount
2. What are some relationships between different elements of the dataset
3. Based on our findings, who could best utilize the analysis we provided

Initial csv

Name	Age	Gender	Blood Type	Medical Condi	Date of Admission	Doctor	Hospital	Insurance Provider	Billing Amount	Room Nu	Admission Type	Discharge Date	Medication	Test Results
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edwArD EDWaRDs	21	Female	AB-	Diabetes	11/3/2020	Kelly Olson	Group Middleton	Medicare	19580.87234	389	Emergency	11/15/2020	Paracetamol	Inconclusive
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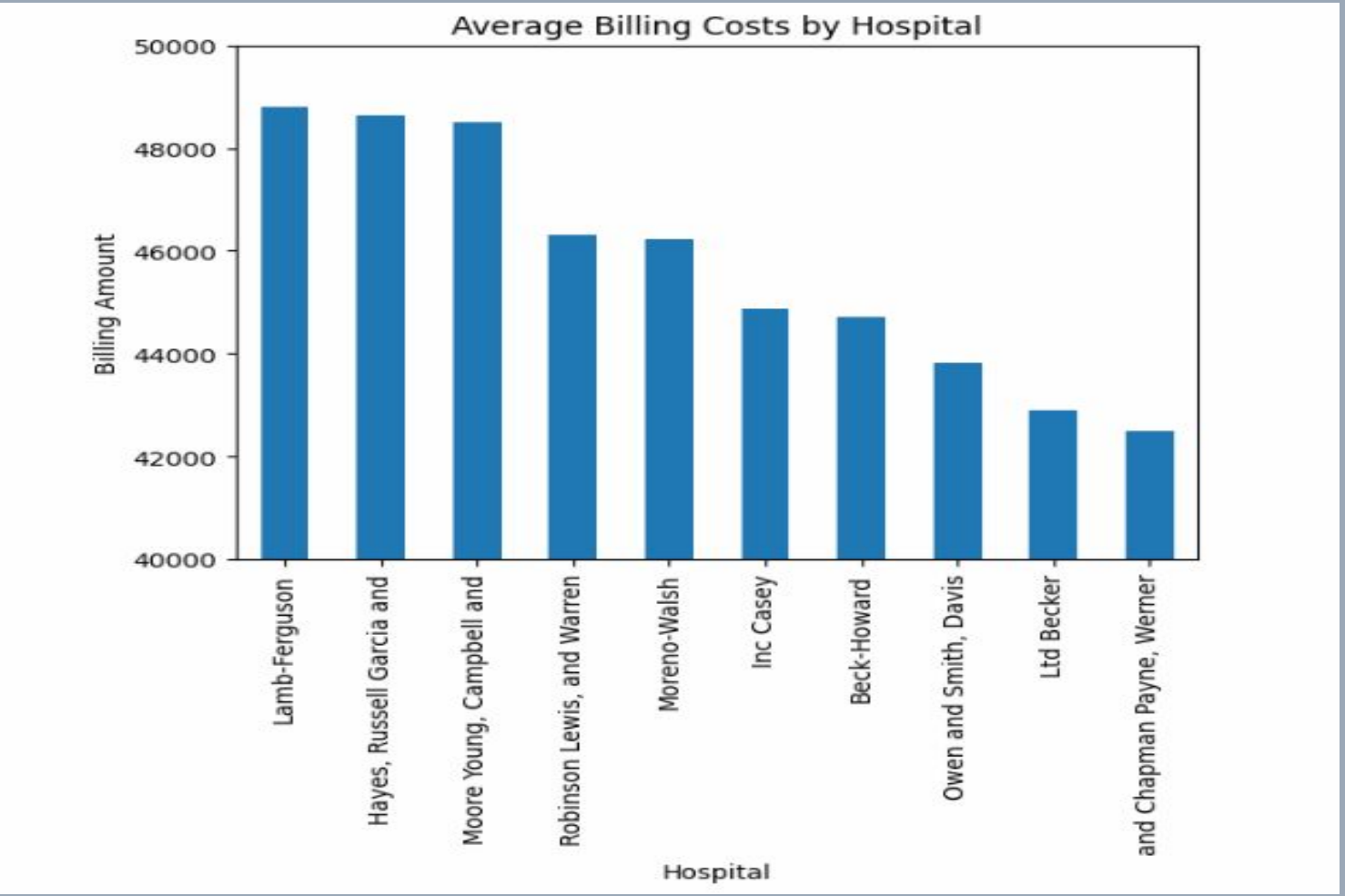
Data Cleansed

Name	Age	Gender	Blood Type	Medical Condition	Date of Admission	Doctor	Hospital	Insurance Provider	Billing Amount	Admission Type	Discharge Date	Test Results	Length of Stay	Cost Per Day
Bobby JacksOn	30	Male	B-	Cancer	2024-01-31	Matthew Smith	Sons and Miller	Blue Cross	18856.281306	Urgent	2024-02-02	Normal	2	9428.140653
mIchael LiU	30	Male	AB-	Hypertension	2024-04-05	Vicki Nguyen	Fernandez and Phillips, Singh	Medicare	30590.541806	Emergency	2024-04-22	Inconclusive	17	1799.443636
Kim ScOtt	63	Male	A-	Asthma	2024-04-07	Cindy Ellis	Scott-Kelly	UnitedHealthcare	39723.166051	Emergency	2024-05-04	Inconclusive	27	1471.228372
MicHAEl MillEr	31	Male	B+	Diabetes	2024-02-06	Jonathan Drake	Clark Brown, and Myers	UnitedHealthcare	35776.815111	Emergency	2024-02-10	Normal	4	8944.203778
tiMOThY myers	61	Male	B+	Cancer	2024-03-02	Timothy Baker	and Sons Reyes	UnitedHealthcare	29504.387442	Urgent	2024-03-26	Inconclusive	24	1229.349477

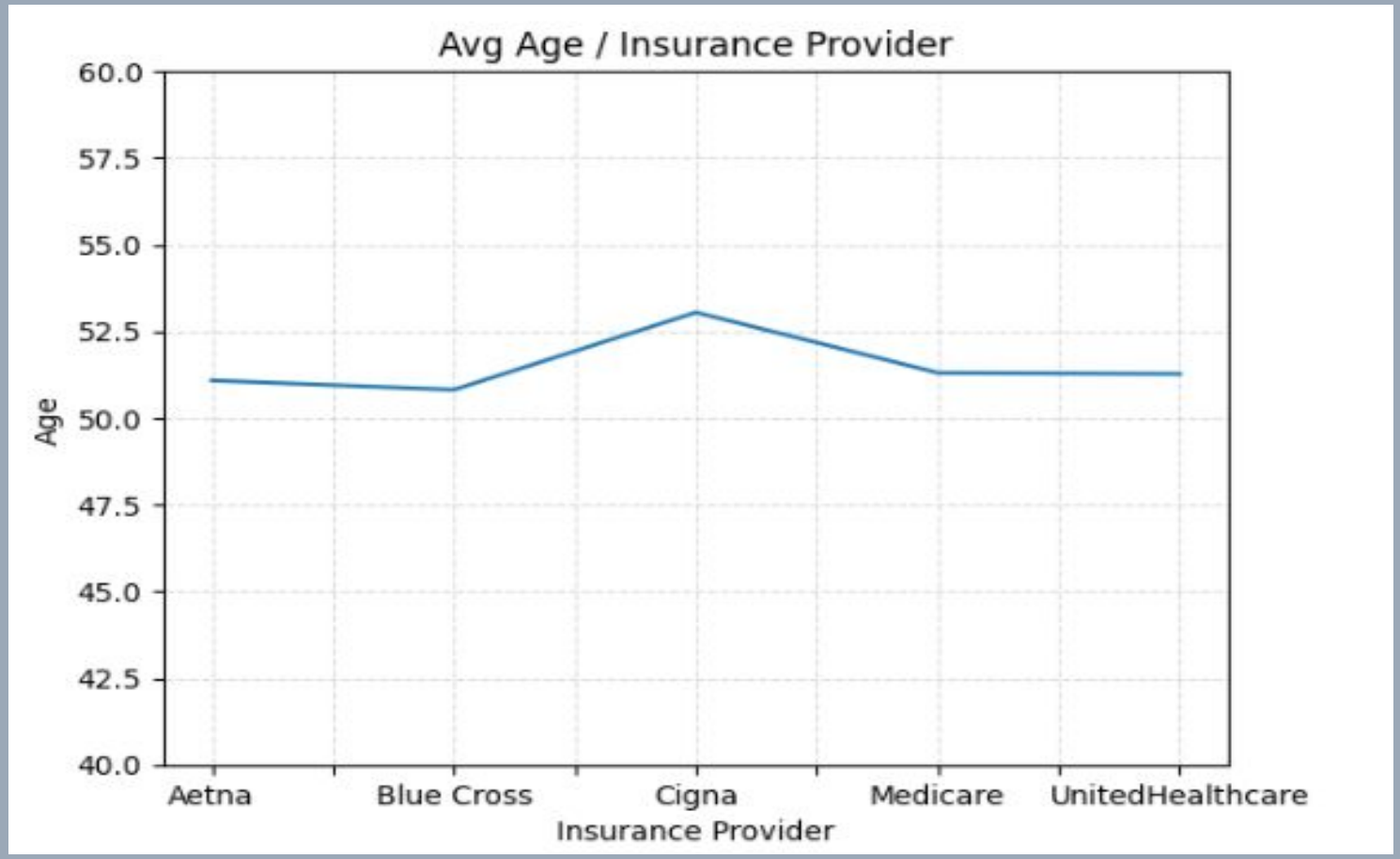
SOPS:

Data cleaning: The original dataset retrieved was a healthcare data set of hospital/clinic operations with the focus on treating Diabetes, Hypertension, Cancer, and Asthma. The first step of our analysis was cleansing the data. We first tested the code to ensure our selected year of 2024 revealed no errors and to ensure the data only reflected 2024 results. After cleansing the file, we began removing unnecessary columns that were not required for our analysis goal. Lastly, we performed a check for duplicates then began analyzing the remaining data.



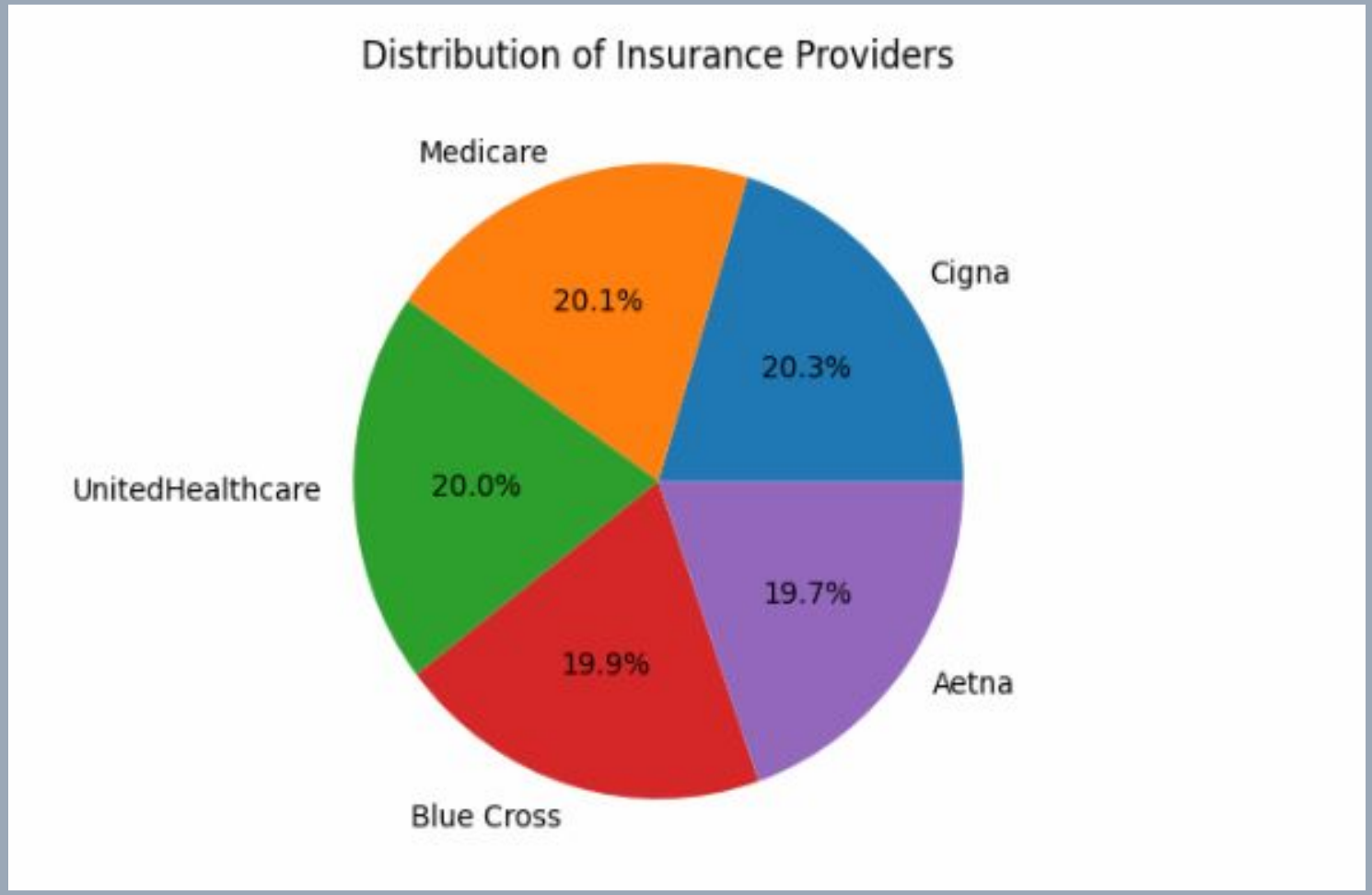
Average Billing Costs by Hospital:

- Used to see which hospital can be seen as the most expensive from a patient's perspective.
- Lamb Ferguson is represented as the highest average billing cost per patient.



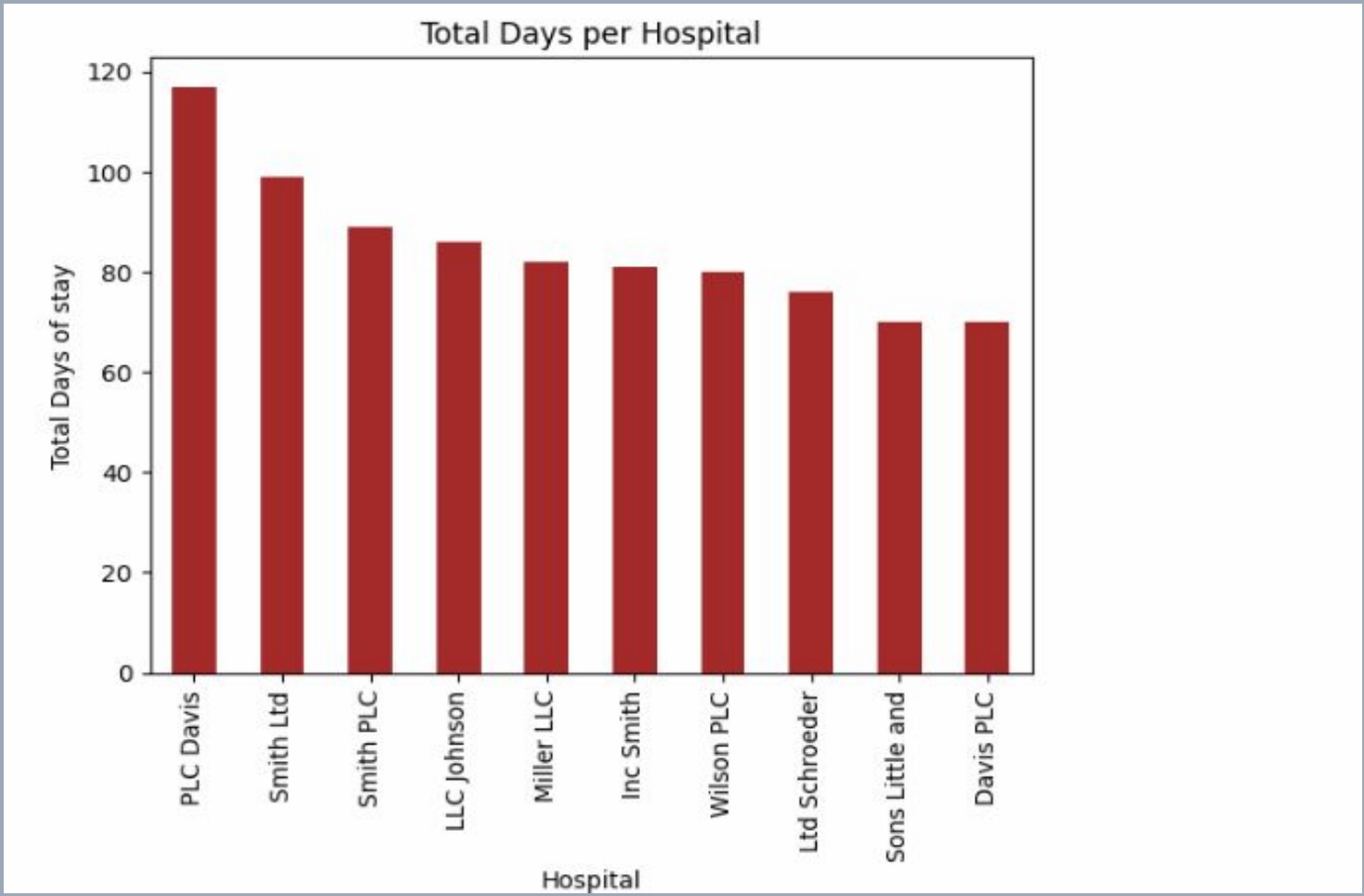
Age based on healthcare provider:

- Indicates mean of age: Insurance provider
- Shows a trend of which insurance provider have better premiums for clients.



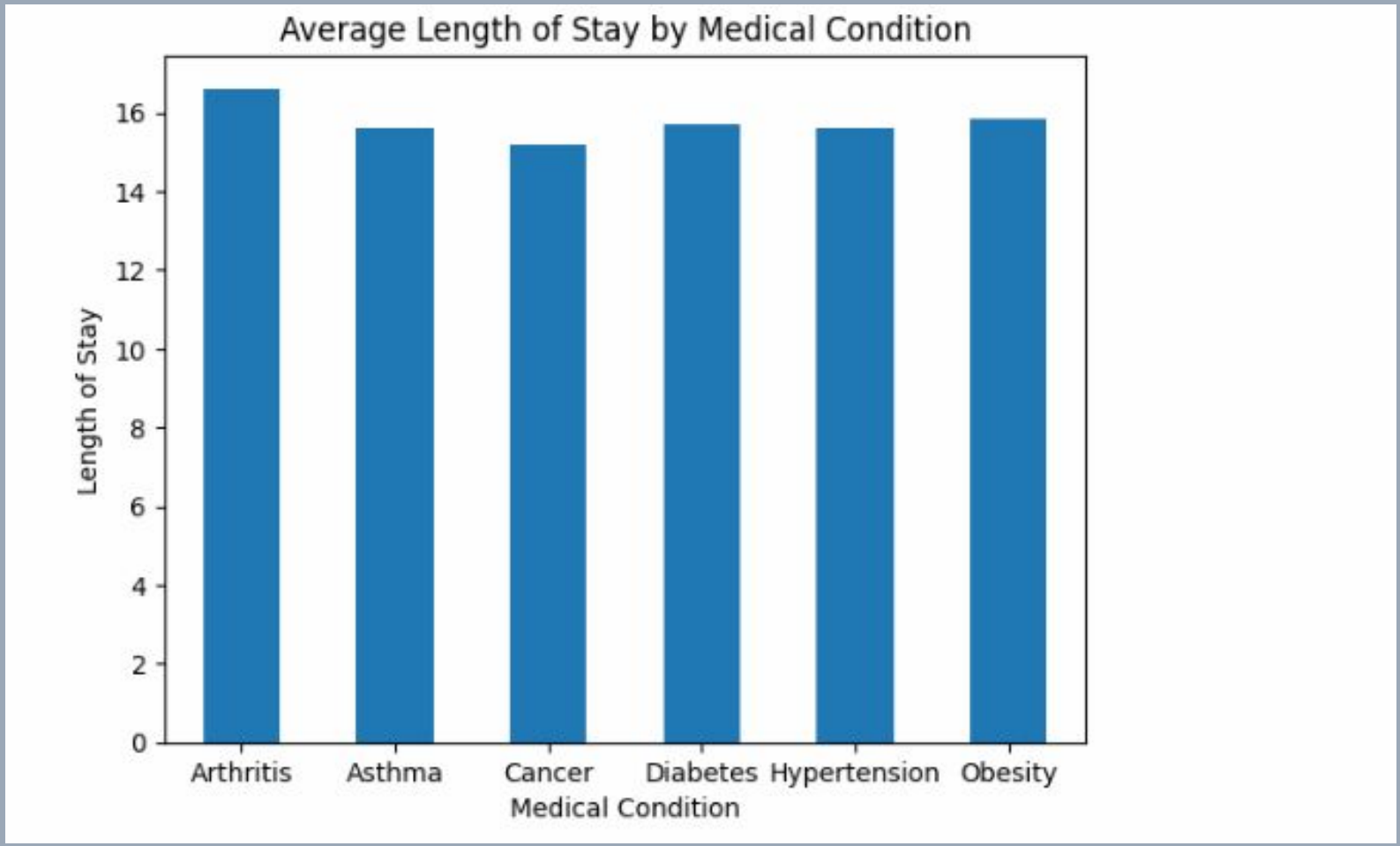
Distribution of Insurance Providers:

- Very close but Cigna is the most common insurance provider at 20.3%
- The least popular is Aetna at 19.7%



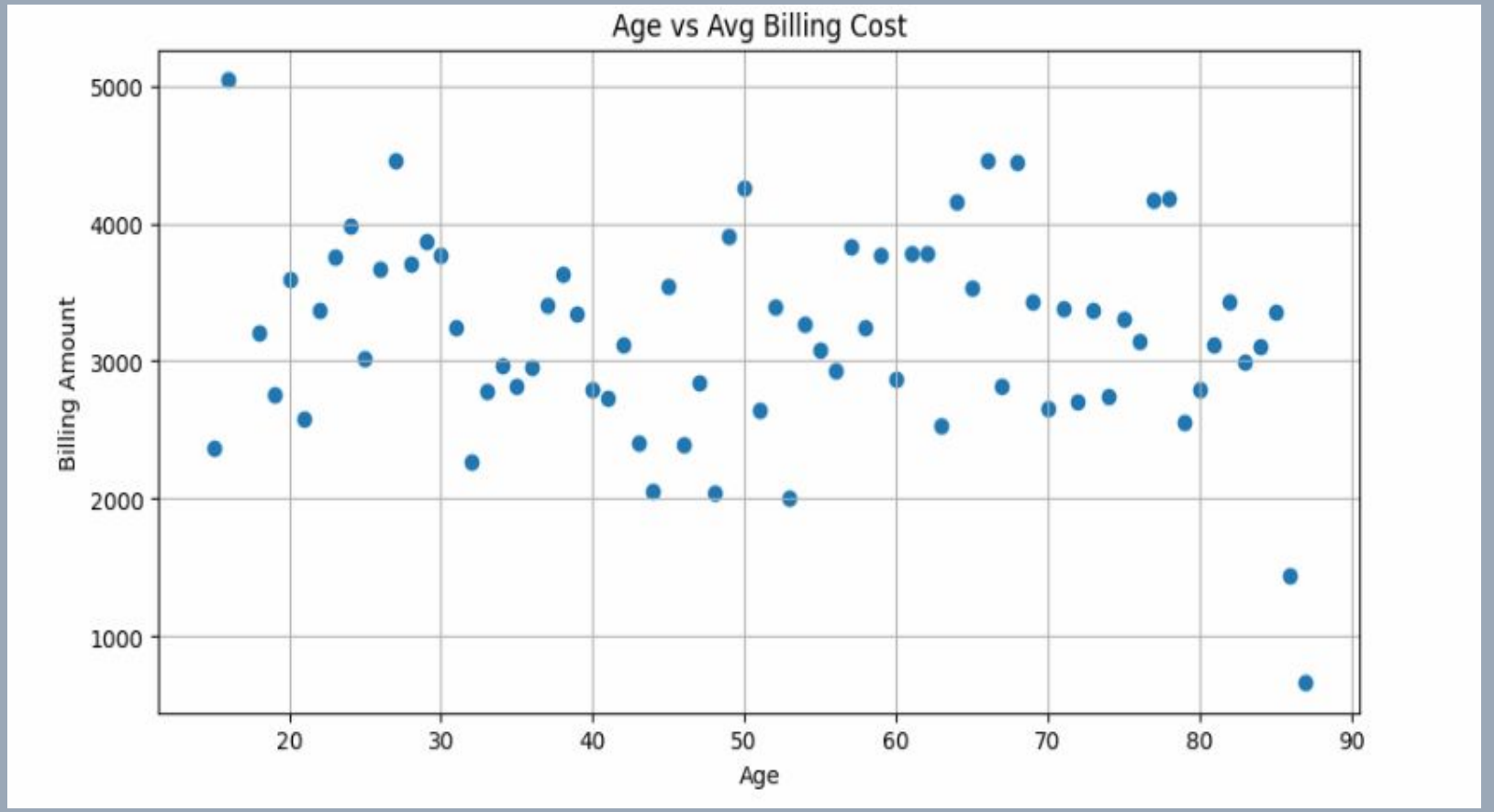
Total Days per Hospital:

- Length of Stay (LOS) equates to Discharge Date - Admission Date.
- Top 10 hospitals with combined LOS for all patients sampled for each facility.
- 40% of sample were between age 61 and 100.
- 52% related to elective stays which typically required more observation and recovery.



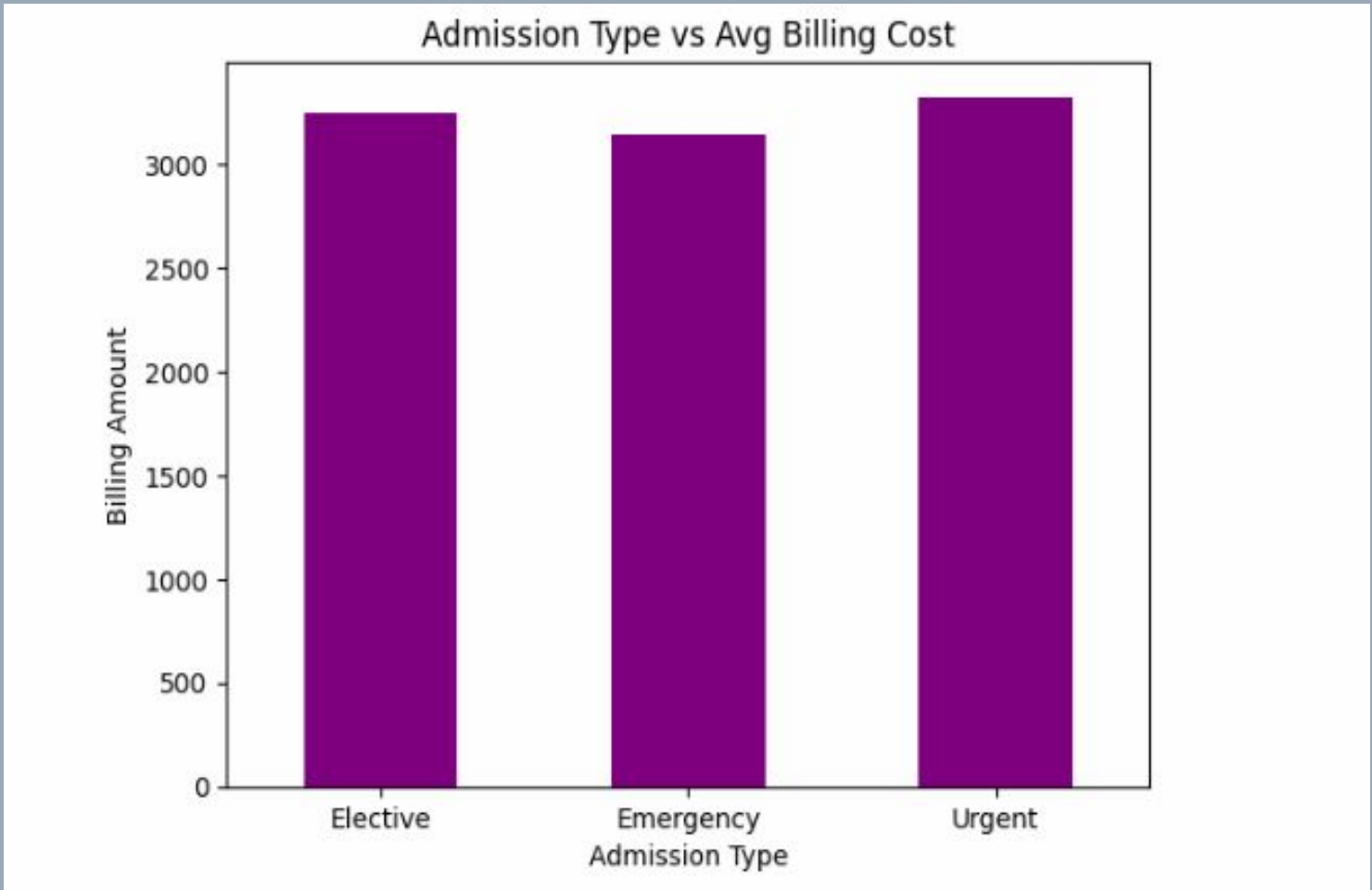
Average Length of Stay by Medical Condition:

- Little variance of average length of stay between admission type (all were between 15-16 days).
- Primary driven by Arthritis which can require up to a 2 week stay.
- Asthma, varies from one day to more depending on various other factors.
- Cancer, Diabetes, Hypertension and Obesity can vary as well depending on the type and severity.



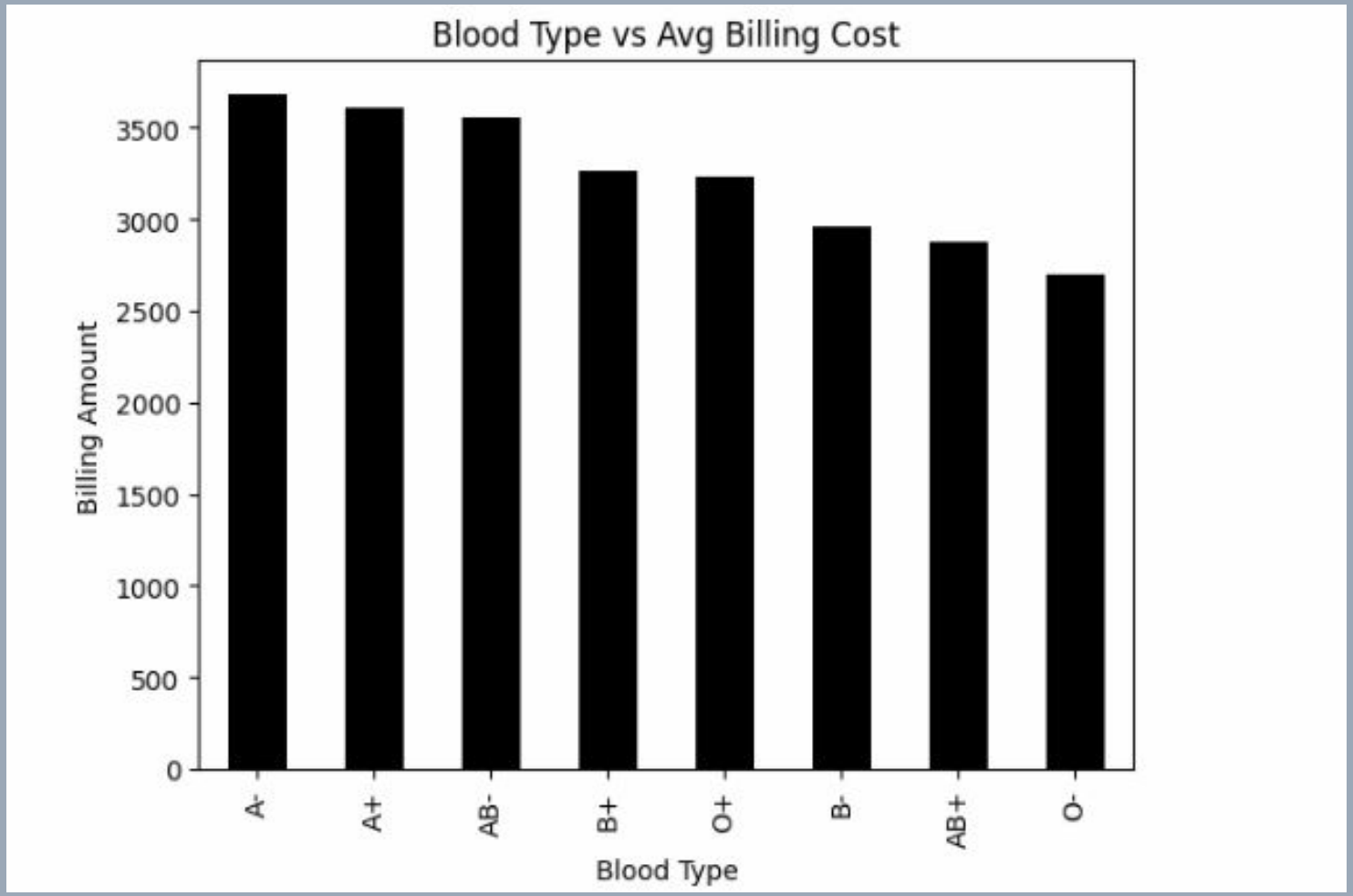
Age vs Avg Billing Cost:

- Most results fall between a billing cost of $2,000 and $4,000 across all ages with some outliers
- These outliers may reflect unique treatments, limited care, or specific insurance factors.
- Additional analysis is needed to determine the impact of factors like treatment type, insurance coverage, or medical conditions on these costs.



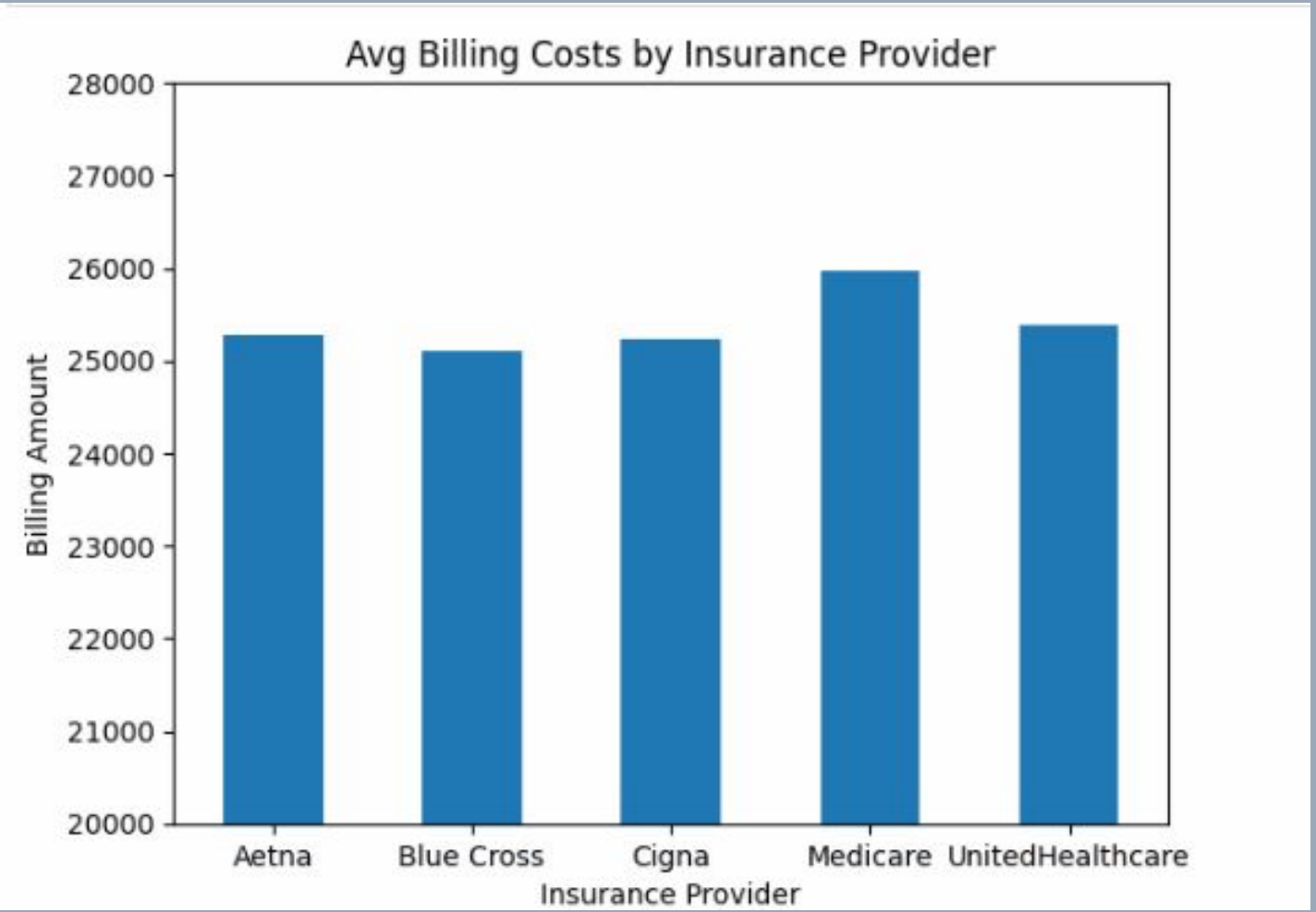
Admission Type vs Avg Billing Cost:

- Elective, Emergency, and Urgent.
- Very close but Urgent has the highest average billing cost.



Blood Type vs Avg Billing Cost:

- A- blood type had the highest average billing cost
- O+ most common blood type
- AB negative, B negative some of the rarest blood types in the US
- Lack of correlation, it could be said rare blood types could result in a higher billing cost



Avg Billing Costs by Insurance Provider:

- Medicare is shown to have the highest average billing cost per patient
- Little variance in cost between insurance providers.

Research Questions:

1. What is the impact of a patient's information to their billing amount.
    A. No real correlation with the exception of those patients 60+ associated with arthritis.
    B. Appears the hospitals are charging standard fees regardless age or gender.

2. What are some relationships between different elements of the dataset?
    A. No real relationships could be identified as some of the information is inconclusive.

3. Based on our findings, who could best utilize the analysis we provided?
    A. As it stands, the data appears to be incomplete as more analysis would be required to possibly include specific alignments and/or diagnosis and potentially the actual location of the facilities.

In our final analysis we've noticed that the data set is limited. However, it did not stop us from searching for our end goal. This data set can be used for patients, insurance providers, and hospitals. In this data set we were able to find which insurance provider's may be the best fit for lower billing amounts for patients alongside which hospitals that can be a better fit for those in need of immediate accommodation and care. For hospitals and insurance providers it can give insight on which admission type along with which medical condition was more profitable for them. We calculated the majority of the correlations by finding the mean, and by doing so it can help them select their target demographic. Which condition and based on admission type they will profit off by.