



# Advancing Healthcare Analysis Project

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# Introduction

- A healthcare data analytics project is described in this presentation.
- The project overview, the healthcare datasets used, the significance of Power Query, and data cleansing will all be covered.
- Data modeling and DAX transformation will be covered, then dashboards and visualizations.
- Treatment costs and methods for expanding data-driven healthcare throughout the company will be among the main assessments.
- We will wrap up with some observations that show how data analytics may improve healthcare results.



# Project Overview



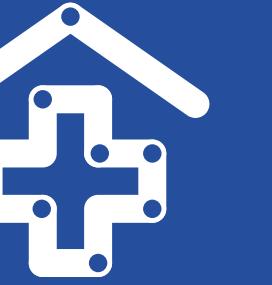
# HealthStat Solutions and Objective



- HealthStat Solutions aims to leverage data analytics to optimize healthcare outcomes.
- Using Power BI, the analysis focused on understanding patient trends, treatment costs, and hospital efficiencies.
- Develop a comprehensive dashboard using Power BI that enables better decision-making for healthcare providers.
- By visualizing key metrics like patient demographics, treatment effectiveness, and hospital performance.



# Importance of Data-Driven Healthcare



- 01 Enhanced Patient Care:**
  - By employing data analysis, healthcare professionals can personalize treatments and interventions, resulting in improved patient outcomes.
- 02 Operational Efficiency**
  - Expert consultations in various medical specialties
  - Insights derived from data can optimize resource allocation, reduce expenses, and streamline administrative workflows.
- 03 Predictive Analytics**
  - Modeling helps forecast patient needs.
  - Identify individuals at high risk, and proactively address potential healthcare challenges.



# Healthcare Datasets

# Patient-Centric Dataset

File Format : Excel Sheet

Columns:-

- Patient ID: Unique identifier for each patient
- Patient Name: Name of the patient
- Age: Patient's age
- Gender: Patient's gender
- Blood Type: Patient's blood group
- Diagnosis: Medical condition diagnosed
- Treatment: Treatment provided to the patient
- Admission Date: Date of hospital admission
- Discharge Date: Date of hospital discharge
- Total Bill: Overall medical expenses incurred
- Full Prescription Details: List of prescribed medications

This dataset focuses on patient demographics, diagnosis, treatments, admission details, and medical costs.



# Patient-Centric Dataset, Continue...

1 <sup>2</sup> <sub>3</sub> PatientID	A <sup>B</sup> <sub>C</sub> PatientName	1 <sup>2</sup> <sub>3</sub> Age	A <sup>B</sup> <sub>C</sub> Gender	A <sup>B</sup> <sub>C</sub> BloodType	A <sup>B</sup> <sub>C</sub> Diagnosis	A <sup>B</sup> <sub>C</sub> Treatment	1 <sup>2</sup> <sub>3</sub> AdmissionDate	1 <sup>2</sup> <sub>3</sub> DischargeDate
● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty
1000 distinct, 1000 unique	369 distinct, 90 unique	100 distinct, 0 unique	3 distinct, 0 unique	8 distinct, 0 unique	5 distinct, 0 unique	3 distinct, 0 unique	1000 distinct, 1000 unique	1000 distinct, 1000 unique
1 David Johnson		3 Other	A+	Flu	Medication		44197	44198
2 Unknown		82 Other	A-	Covid-19	Medication		44198	44199
3 William Taylor		56 Other	B+	Hypertension	Therapy		44199	44200
4 William Davis		36 Other	AB+	Covid-19	Therapy		44200	44201
5 Robert Davis		78 Male	B+	Flu	Surgery		44201	44202
6 Susan Taylor		18 Female	B+	Diabetes	Medication		44202	44203
7 Richard Johnson		62 Female	A+	Hypertension	Surgery		44203	44204
8 Unknown		13 Male	B-	Flu	Medication		44204	44205
9 Susan Smith		34 Male	AB+	Flu	Surgery		44205	44206
10 Susan Anderson		31 Female	B+	Flu	Therapy		44206	44207
11 David Lopez		93 Other	B+	Covid-19	Medication		44207	44208
12 John Anderson		31 Female	A-	Flu	Therapy		44208	44209
13 David Rodriguez		65 Male	O+	Hypertension	Therapy		44209	44210
14 Jennifer Smith		64 Other	O+	Asthma	Medication		44210	44211
15 Linda Anderson		6 Female	AB-	Hypertension	Surgery		44211	44212
16 Michael Williams		47 Male	A+	Covid-19	Therapy		44212	44213
17 Robert Anderson		27 Female	A+	Diabetes	Medication		44213	44214
18 Patricia Wilson		40 Female	AB-	Flu	Medication		44214	44215
19 Jennifer Wilson		91 Male	A-	Diabetes	Surgery		44215	44216
20 Charles Moore		24 Other	B+	Covid-19	Surgery		44216	44217
21 Robert Smith		6 Other	A+	Asthma	Therapy		44217	44218

talBill

A<sup>B</sup><sub>C</sub> Full Prescription Details



id	94%	● Valid
or	0%	○ Error
pty	6%	■ Empty
distinct, 940 unique	1000 distinct, 1000 unique	
14383.78235	Eurosemide 40mg, three times a day for 5 days; Clonazepam 2mg, once a day for 7 days	
15512.30221	Losartan 50mg, twice a day for 7 days; Amoxicillin 500mg, twice a day for 5 days	
4039.296436	Amlodipine 5mg, twice a day for 5 days; Gabapentin 300mg, once a day for 7 days	
4226.498069	Azithromycin 250mg, three times a day as needed; Simvastatin 40mg, once a day for 7 days	
2562.768983	Duloxetine 60mg, three times a day for 5 days; Amoxicillin 500mg, twice a day for 5 days	
10407.38299	Escitalopram 10mg, twice a day for 7 days; Fluoxetine 20mg, once a day for 7 days	
12949.53783	Sertraline 100mg, three times a day for 7 days; Fluoxetine 20mg, once a day for 7 days	
2502.975184	Ibuprofen 400mg, twice a day for 7 days; Prednisone 20mg, twice a day for 5 days	
8705.890833	Duloxetine 60mg, once a day as needed; Prednisone 20mg, twice a day for 5 days	
7148.320535	Fluoxetine 20mg, once a day for 7 days; Tramadol 50mg, once a day for 7 days	
17614.7762	Levothyroxine 50mcg, three times a day as needed; Clopidogrel 75mg, once a day for 7 days	
18852.70984	Escitalopram 10mg, twice a day as needed; Lisinopril 20mg, three times a day for 5 days	
14045.29413	Eurosemide 40mg, once a day for 5 days; Loratadine 10mg, once a day for 7 days	
18779.14137	Ibuprofen 400mg, three times a day for 5 days; Sertraline 100mg, once a day for 7 days	
1062.458277	Citalopram 20mg, once a day as needed; Ibuprofen 400mg, twice a day for 5 days	
2517.390177	Ciprofloxacin 500mg, once a day for 5 days; Gabapentin 300mg, twice a day for 5 days	
1251.882972	Levothyroxine 50mcg, three times a day as needed; Gabapentin 300mg, twice a day for 5 days	
5056.072749	Meloxicam 15mg, once a day as needed; Simvastatin 40mg, twice a day for 5 days	
19685.22606	Azithromycin 250mg, twice a day for 7 days; Sertraline 100mg, three times a day for 5 days	
null	Clonazepam 2mg, once a day for 7 days; Amoxicillin 500mg, three times a day for 5 days	
13174.61283	Atorvastatin 10mg, once a day for 7 days; Fluoxetine 20mg, once a day for 7 days	

# Hospital-Centric Dataset

File Format : Excel Sheet

Columns:-

- Patient ID: Unique identifier linking to Patient-Centric data
- Hospital: The hospital where the patient received treatment
- Doctor Name: Name of the treating doctor
- Room Number: Assigned room in the hospital
- Daily Cost: Daily room and cost of therapy
- Treatment Type: The type of medical treatment administered
- Recovery Rating: Patient's recovery progress, rated by the hospital



This dataset includes information about the hospital where the patient was treated, along with doctor details, room costs, treatment type, and recovery ratings.

# Hospital-Centric Dataset, Continue...

1 <sup>2</sup> <sub>3</sub> PatientID	A <sup>B</sup> <sub>C</sub> Hospital	A <sup>B</sup> <sub>C</sub> DoctorName	1 <sup>2</sup> <sub>3</sub> RoomNumber	1.2 DailyCost	A <sup>B</sup> <sub>C</sub> TreatmentType	1 <sup>2</sup> <sub>3</sub> RecoveryRating
● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty	100% 0% 0%	● Valid ○ Error ■ Empty
1000 distinct, 1000 unique	6 distinct, 0 unique	369 distinct, 83 unique	421 distinct, 128 unique	1000 distinct, 1000 unique	4 distinct, 0 unique	11 distinct, 0 unique
1 Riverside Hospital	Joseph Lopez		178	359.0060207	Surgery	10
2 Green Valley Medical Center	James Moore		368	933.9156945	Surgery	4
3 Riverside Hospital	Michael Lopez		260	1272.088112	Counseling	null
4 Cedar Sinai Clinic	Linda Rodriguez		228	402.6099319	Counseling	3
5 Riverside Hospital	Mary Hernandez		167	483.1293499	Physical Therapy	null
6 Green Valley Medical Center	Richard Jackson		126	497.703191	Surgery	null
7 Maple Grove Health Facility	Thomas Williams		133	632.9715359	Counseling	10
8 Maple Grove Health Facility	Linda Martin		265	1101.93207	Physical Therapy	4
9 Silver Oak Medical Plaza	Sarah Taylor		208	705.087576	Physical Therapy	8
10 Cedar Sinai Clinic	Thomas Davis		381	1031.45208	Medication	9
11 Maple Grove Health Facility	Patricia Anderson		167	1479.402633	Physical Therapy	10
12 Cedar Sinai Clinic	Charles Hernandez		255	1304.393059	Physical Therapy	3
13 Cedar Sinai Clinic	Mary Gonzalez		257	1926.852778	Physical Therapy	3
14 Unknown	Linda Martin		456	552.9519832	Physical Therapy	3
15 Riverside Hospital	Thomas Miller		240	1052.074689	Physical Therapy	7
16 Green Valley Medical Center	Sarah Jackson		404	907.8511421	Surgery	2
17 Cedar Sinai Clinic	Sarah Wilson		332	399.2509535	Physical Therapy	1
18 Silver Oak Medical Plaza	Elizabeth Wilson		481	1140.278528	Physical Therapy	3
19 Green Valley Medical Center	Robert Taylor		54	153.4989991	Counseling	6
20 Maple Grove Health Facility	Joseph Taylor		301	950.8952422	Counseling	9
21 Silver Oak Medical Plaza	Susan Jones		165	518.6732444	Surgery	2

# Power Query Data Cleaning

# Cleaning Steps

## Division of Queries Using Power Query Merge Querie

- The two datasets were merged using the PatientID column through a full outer join
- Ensuring that all patient records from both datasets were included.

## Medication Details

- The column with information about the medicines prescribed to patients was very detailed.
- To make sense of it, we needed to pick out the important parts for our analysis.

## Date ConfusionQuerie

- The dates when patients were admitted and discharged weren't in a consistent format.
- We fixed this so that all dates are clear and consistent, making sure our data is accurate.



## "LengthOfStay" column

- It was created to calculate how long each patient stayed at the hospital, which became an important metric for further analysis.

# Cleaning Steps, Continue...

## Missing Patient Name

- Some records didn't have names for patients, so we needed to clean up the data to fill in these missing names.

## "AgeGroup" column

- It was created to classify patients into four groups: "Child", "Teenage", "Adult" and "Senior" based on their age.

## Total Bill Column

- There are null values in the Total Bill column.
- These null values might affect our analysis of Cost and Finance.

## Hospital Name Column

- Some records have missing values in the Hospital Name column.
- We need to fix these missing values for complete and accurate data.

# Cleaning Steps, Continue...

## Recovery Rating Column



- There are null values in the Recovery Rating column. These null values might affect our analysis of patient recovery.

# Patient Information Query

## Columns:

- PatientID
- PatientName
- Age
- Gender
- BloodType

This query focuses on the demographic information of the patients.

1 <sup>2</sup> 3 PatientID	A <sup>B</sup> C PatientName	1 <sup>2</sup> 3 Age	A <sup>B</sup> C AgeGroup	A <sup>B</sup> C Gender	A <sup>B</sup> C BloodType
● Valid 100%	● Valid 100%	● Valid 100%	● Valid 100%	● Valid 100%	● Valid 100%
● Error 0%	● Error 0%	● Error 0%	● Error 0%	● Error 0%	● Error 0%
● Empty 0%	● Empty 0%	● Empty 0%	● Empty 0%	● Empty 0%	● Empty 0%
1000 distinct, 1000 unique	369 distinct, 90 unique	100 distinct, 0 unique	3 distinct, 0 unique	8 distinct, 0 unique	
1 David Johnson		3 Child	Other	A+	
2 UnKnown		82 Senior	Other	A-	
3 William Taylor		56 Adult	Other	B+	
4 William Davis		36 Adult	Other	AB+	
5 Robert Davis		78 Senior	Male	B+	
6 Susan Taylor		18 Teenager	Female	B+	
7 Richard Johnson		62 Adult	Female	A+	
8 UnKnown		13 Teenager	Male	B-	
9 Susan Smith		34 Adult	Male	AB+	
10 Susan Anderson		31 Adult	Female	B+	
11 David Lopez		93 Senior	Other	B+	
12 John Anderson		31 Adult	Female	A-	
13 David Rodriguez		65 Senior	Male	O+	
14 Jennifer Smith		64 Adult	Other	O+	
15 Linda Anderson		6 Child	Female	AB-	
16 Michael Williams		47 Adult	Male	A+	
17 Robert Anderson		27 Adult	Female	A+	
18 Patricia Wilson		40 Adult	Female	AB-	
19 Jennifer Wilson		91 Senior	Male	A-	
20 Charles Moore		24 Adult	Other	B+	



# Hospital Information Query

## Columns:

- PatientID
- Hospital
- DoctorName
- RoomNumber

This query focuses on the hospital and doctor details related to patient treatment.



1 <sup>2</sup> <sub>3</sub> PatientID	A <sup>B</sup> <sub>C</sub> Hospital	A <sup>B</sup> <sub>C</sub> DoctorName	1 <sup>2</sup> <sub>3</sub> RoomNumber
● Valid 100%	● Valid 100%	● Valid 100%	● Valid 100%
● Error 0%	● Error 0%	● Error 0%	● Error 0%
● Empty 0%	● Empty 0%	● Empty 0%	● Empty 0%
1000 distinct, 1000 unique	6 distinct, 0 unique	369 distinct, 83 unique	421 distinct, 128 unique
1	1 Riverside Hospital	Joseph Lopez	178
2	2 Green Valley Medical Center	James Moore	368
3	3 Riverside Hospital	Michael Lopez	260
4	4 Cedar Sinai Clinic	Linda Rodriguez	228
5	5 Riverside Hospital	Mary Hernandez	167
6	6 Green Valley Medical Center	Richard Jackson	126
7	7 Maple Grove Health Facility	Thomas Williams	133
8	8 Maple Grove Health Facility	Linda Martin	265
9	9 Silver Oak Medical Plaza	Sarah Taylor	208
10	10 Cedar Sinai Clinic	Thomas Davis	381
11	11 Maple Grove Health Facility	Patricia Anderson	167
12	12 Cedar Sinai Clinic	Charles Hernandez	255
13	13 Cedar Sinai Clinic	Mary Gonzalez	257
14	14 UnKnown	Linda Martin	456
15	15 Riverside Hospital	Thomas Miller	240
16	16 Green Valley Medical Center	Sarah Jackson	404
17	17 Cedar Sinai Clinic	Sarah Wilson	332
18	18 Silver Oak Medical Plaza	Elizabeth Wilson	481
19	19 Green Valley Medical Center	Robert Taylor	54
20	20 Maple Grove Health Facility	Joseph Taylor	301
21	21 Silver Oak Medical Plaza	Susan Jones	165

# Cost and Recovery Query

Columns:

- PatientID
- DailyCost
- Total Bill
- TreatmentType
- RecoveryRating

This query will include information about the daily treatment cost, type of treatment, and recovery rating.

1 <sup>2</sup> <sub>3</sub> PatientID	1 <sup>2</sup> <sub>3</sub> AdmissionDate	1 <sup>2</sup> <sub>3</sub> DischargeDate	A <sup>B</sup> <sub>C</sub> TreatmentType	1 <sup>2</sup> <sub>3</sub> LengthOfStay	1.2 DailyCost	1.2 TotalBill	1.2 RecoveryRating
● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%	● Valid 100% ● Error 0% ● Empty 0%
1000 distinct, 1000 unique	1000 distinct, 1000 unique	630 distinct, 354 unique	4 distinct, 0 unique	100 distinct, 44 unique	1000 distinct, 1000 unique	1000 distinct, 1000 unique	11 distinct, 0 unique
1	1/1/2021 12:00:00 AM	2/10/2021 12:00:00 AM	Surgery	40	359.0060207	14383.78235	10
2	1/2/2021 12:00:00 AM	1/18/2021 12:00:00 AM	Surgery	17	933.9156945	15512.30221	4
3	1/3/2021 12:00:00 AM	1/6/2021 12:00:00 AM	Counseling	3	1272.088112	4039.296436	0
4	1/4/2021 12:00:00 AM	1/14/2021 12:00:00 AM	Counseling	10	402.6099319	4226.498069	3
5	1/5/2021 12:00:00 AM	1/10/2021 12:00:00 AM	Physical Therapy	5	483.1293499	2562.768983	0
6	1/6/2021 12:00:00 AM	1/26/2021 12:00:00 AM	Surgery	21	497.703191	10407.38299	0
7	1/7/2021 12:00:00 AM	1/27/2021 12:00:00 AM	Counseling	20	632.9715359	12949.53783	10
8	1/8/2021 12:00:00 AM	1/10/2021 12:00:00 AM	Physical Therapy	2	1101.93207	2502.975184	4
9	1/9/2021 12:00:00 AM	1/21/2021 12:00:00 AM	Physical Therapy	12	705.087576	8705.890833	8
10	1/10/2021 12:00:00 AM	1/16/2021 12:00:00 AM	Medication	7	1031.45208	7148.320535	9
11	1/11/2021 12:00:00 AM	1/22/2021 12:00:00 AM	Physical Therapy	12	1479.402633	17614.7762	10
12	1/12/2021 12:00:00 AM	1/26/2021 12:00:00 AM	Physical Therapy	14	1304.393059	18852.70984	3
13	1/13/2021 12:00:00 AM	1/20/2021 12:00:00 AM	Physical Therapy	7	1926.852778	14045.29413	3
14	1/14/2021 12:00:00 AM	2/16/2021 12:00:00 AM	Physical Therapy	34	552.9519832	18779.14137	3
15	1/15/2021 12:00:00 AM	1/16/2021 12:00:00 AM	Physical Therapy	1	1052.074689	1062.458277	7
16	1/16/2021 12:00:00 AM	1/18/2021 12:00:00 AM	Surgery	3	907.8511421	2517.390177	2
17	1/17/2021 12:00:00 AM	1/20/2021 12:00:00 AM	Physical Therapy	3	399.2509535	1251.882972	1
18	1/18/2021 12:00:00 AM	1/22/2021 12:00:00 AM	Physical Therapy	4	1140.278528	5056.072749	3
19	1/19/2021 12:00:00 AM	5/27/2021 12:00:00 AM	Counseling	128	153.4989991	19685.22606	6
20	1/20/2021 12:00:00 AM	1/21/2021 12:00:00 AM	Counseling	1	950.8952422	950.8952422	9
21	1/21/2021 12:00:00 AM	2/15/2021 12:00:00 AM	Surgery	25	518.6732444	13174.61283	2

# Diagnosis and Treatment Query

Columns:

- PatientID
- Diagnosis
- Treatment
- Full Prescription Details

This query will capture the medical conditions, treatments, and prescription details.

1 <sup>2</sup> <sub>3</sub> PatientID	A <sup>B</sup> <sub>C</sub>	Diagnosis	A <sup>B</sup> <sub>C</sub>	Treatment	A <sup>B</sup> <sub>C</sub>	Full Prescription Details
● Valid	100%	● Valid	100%	● Valid	100%	● Valid
● Error	0%	● Error	0%	● Error	0%	● Error
● Empty	0%	● Empty	0%	● Empty	0%	● Empty
1000 distinct, 1000 unique		5 distinct, 0 unique		3 distinct, 0 unique		1000 distinct, 1000 unique
1 Flu		Medication		Furosemide 40mg, three times a day for 5 days; Clonazepam 2mg, thr...		
2 Covid-19		Medication		Losartan 50mg, twice a day for 7 days; Amoxicillin 500mg, twice a day ...		
3 Hypertension		Therapy		Amlodipine 5mg, twice a day for 5 days; Gabapentin 300mg, twice a d...		
4 Covid-19		Therapy		Azithromycin 250mg, three times a day as needed; Simvastatin 40mg, ...		
5 Flu		Surgery		Duloxetine 60mg, three times a day for 5 days; Amoxicillin 500mg, thr...		
6 Diabetes		Medication		Escitalopram 10mg, twice a day for 7 days; Fluoxetine 20mg, once a da...		
7 Hypertension		Surgery		Sertraline 100mg, three times a day for 7 days; Fluoxetine 20mg, three...		
8 Flu		Medication		Ibuprofen 400mg, twice a day for 7 days; Prednisone 20mg, twice a da...		
9 Flu		Surgery		Duloxetine 60mg, once a day as needed; Prednisone 20mg, twice a da...		
10 Flu		Therapy		Fluoxetine 20mg, once a day for 7 days; Tramadol 50mg, once a day fo...		
11 Covid-19		Medication		Levothyroxine 50mcg, three times a day as needed; Clopidogrel 75mg,...		
12 Flu		Therapy		Escitalopram 10mg, twice a day as needed; Lisinopril 20mg, three time...		
13 Hypertension		Therapy		Furosemide 40mg, once a day for 5 days; Loratadine 10mg, once a day...		
14 Asthma		Medication		Ibuprofen 400mg, three times a day for 5 days; Sertraline 100mg, thre...		
15 Hypertension		Surgery		Citalopram 20mg, once a day as needed; Ibuprofen 400mg, twice a da...		
16 Covid-19		Therapy		Ciprofloxacin 500mg, once a day for 5 days; Gabapentin 300mg, twice ...		
17 Diabetes		Medication		Levothyroxine 50mcg, three times a day as needed; Gabapentin 300m...		
18 Flu		Medication		Meloxicam 15mg, once a day as needed; Simvastatin 40mg, twice a da...		
19 Diabetes		Surgery		Azithromycin 250mg, twice a day for 7 days; Sertraline 100mg, three ti...		
20 Covid-19		Surgery		Clonazepam 2mg, once a day for 7 days; Amoxicillin 500mg, three tim...		
21 Asthma		Therapy		Atorvastatin 10mg, once a day for 7 days; Fluoxetine 20mg, once a day...		
22 Covid-19		Therapy		Tramadol 50mg, twice a day as needed; Doxycycline 100mg, once a da...		

# Diagnosis and Treatment Described Query

Columns:

- Med1\_Name
- Med1\_Dosage
- Med1\_Frequceny
- Med2\_Name
- Med2\_Dosage
- Med2\_Frequency

This query will show the specific details for the Full Description Column from the Diagnosis and Treatment Query.

A <sup>B</sup> <sub>C</sub> Med1_Name	A <sup>B</sup> <sub>C</sub> Med1_Dosage	A <sup>B</sup> <sub>C</sub> Med1_Frequency	A <sup>B</sup> <sub>C</sub> Med2_Name	A <sup>B</sup> <sub>C</sub> Med2_Dosage	A <sup>B</sup> <sub>C</sub> Med2_Frequency
● Valid ● Error ● Empty	100% 0% 0%	● Valid ● Error ● Empty	100% 0% 0%	● Valid ● Error ● Empty	100% 0% 0%
	30 distinct, 0 unique	18 distinct, 0 unique	12 distinct, 0 unique	30 distinct, 0 unique	18 distinct, 0 unique
Furosemide	40mg	three times a day for 5 days	Clonazepam	2mg	three times a day for 10 days
Losartan	50mg	twice a day for 7 days	Amoxicillin	500mg	twice a day for 5 days
Amlodipine	5mg	twice a day for 5 days	Gabapentin	300mg	twice a day as needed
Azithromycin	250mg	three times a day as needed	Simvastatin	40mg	once a day for 5 days
Duloxetine	60mg	three times a day for 5 days	Amoxicillin	500mg	three times a day as needed
Escitalopram	10mg	twice a day for 7 days	Fluoxetine	20mg	once a day for 5 days
Sertraline	100mg	three times a day for 7 days	Fluoxetine	20mg	three times a day for 5 days
Ibuprofen	400mg	twice a day for 7 days	Prednisone	20mg	twice a day as needed
Duloxetine	60mg	once a day as needed	Prednisone	20mg	twice a day as needed
Fluoxetine	20mg	once a day for 7 days	Tramadol	50mg	once a day for 7 days
Levothyroxine	50mcg	three times a day as needed	Clopidogrel	75mg	twice a day as needed
Escitalopram	10mg	twice a day as needed	Lisinopril	20mg	three times a day as needed
Furosemide	40mg	once a day for 5 days	Loratadine	10mg	once a day for 7 days
Ibuprofen	400mg	three times a day for 5 days	Sertraline	100mg	three times a day as needed
Citalopram	20mg	once a day as needed	Ibuprofen	400mg	twice a day for 7 days
Ciprofloxacin	500mg	once a day for 5 days	Gabapentin	300mg	twice a day for 5 days
Levothyroxine	50mcg	three times a day as needed	Gabapentin	300mg	three times a day as needed
Meloxicam	15mg	once a day as needed	Simvastatin	40mg	twice a day for 10 days
Azithromycin	250mg	twice a day for 7 days	Sertraline	100mg	three times a day for 5 days
Clonazepam	2mg	once a day for 7 days	Amoxicillin	500mg	three times a day as needed
Atorvastatin	10mg	once a day for 7 days	Fluoxetine	20mg	once a day for 5 days



# Diagnosis and Treatment Described Query, Continue...

Columns:

- Med3\_Name
- Med3\_Dosage
- Med3\_Frequency
- Med4\_Name
- Med4\_Dosage
- Med4\_Frequency



A <sup>B</sup> <sub>C</sub> Med3_Name	A <sup>B</sup> <sub>C</sub> Med3_Dosage	A <sup>B</sup> <sub>C</sub> Med3_Frequency	A <sup>B</sup> <sub>C</sub> Med4_Name	A <sup>B</sup> <sub>C</sub> Med4_Dosage	A <sup>B</sup> <sub>C</sub> Med4_Frequency
● Valid ● Error ● Empty	67% 0% 33%	● Valid ● Error ● Empty	100% 0% 0%	● Valid ● Error ● Empty	100% 0% 0%
31 distinct, 0 unique	19 distinct, 0 unique	13 distinct, 0 unique	31 distinct, 0 unique	19 distinct, 0 unique	13 distinct, 0 unique
Hydrochlorothiazide	25mg	three times a day for 10 days		null	None
Prednisone	20mg	once a day as needed		null	None
	null	None		null	None
	null	None		null	None
Doxycycline	100mg	twice a day for 10 days		null	None
Duloxetine	60mg	once a day as needed	Doxycycline	100mg	three times a day as needed
Doxycycline	100mg	once a day as needed		null	None
	null	None		null	None
Hydrochlorothiazide	25mg	three times a day for 10 days		null	None
Furosemide	40mg	twice a day for 10 days	Amoxicillin	500mg	twice a day for 5 days
Lisinopril	20mg	once a day for 10 days		null	None
Furosemide	40mg	three times a day for 5 days	Gabapentin	300mg	twice a day for 5 days
Levothyroxine	50mcg	twice a day for 10 days		null	None
	null	None		null	None
	null	None		null	None
Duloxetine	60mg	three times a day for 7 days	Meloxicam	15mg	twice a day as needed
	null	None		null	None
Amlodipine	5mg	once a day for 5 days	Prednisone	20mg	three times a day for 10 days
Levothyroxine	50mcg	twice a day for 7 days		null	None
Simvastatin	40mg	three times a day for 7 days	Clopidogrel	75mg	three times a day for 10 days
Amlodipine	5mg	once a day for 7 days		null	None

# DAX Transformation

# Patients Info Required Dax Continue...

A Measure to calculate the number of Adults, Teenager, Child and Senior Patients

```
1 Adults = CALCULATE(COUNTROWS('Patient Information'), 'Patient Information'[AgeGroup] = "Adult")
```

A Measure to calculate the number of Patients with Blood Type A-, A+, B-, B+, AB-, AB+, O-, O+

---

```
Count A- = CALCULATE(COUNTROWS('Patient Information'), 'Patient Information'[BloodType] = "A-")
```

# Patients Info Required Dax

A parameter to combine AgeGroups for all patients by using calculated measures

```
1 AgeGroup Count = {  
2     ("Adults", NAMEOF('Patient Information'[Adults]), 0),  
3     ("Teenagers", NAMEOF('Patient Information'[Teenagers]), 1),  
4     ("Childs", NAMEOF('Patient Information'[Childs]), 2),  
5     ("Seniors", NAMEOF('Patient Information'[Seniors]), 3)  
6 }
```

A parameter to combine BloodTypes for all patients by using calculated measures

```
1 ParameterBloodType Count = {  
2     ("Count AB+", NAMEOF('Patient Information'[Count AB+]), 0),  
3     ("Count A+", NAMEOF('Patient Information'[Count A+]), 1),  
4     ("Count B+", NAMEOF('Patient Information'[Count B+]), 2),  
5     ("Count 0+", NAMEOF('Patient Information'[Count 0+]), 3),  
6     ("Count AB-", NAMEOF('Patient Information'[Count AB-]), 4),  
7     ("Count A-", NAMEOF('Patient Information'[Count A-]), 5),  
8     ("Count B-", NAMEOF('Patient Information'[Count B-]), 6),  
9     ("Count 0-", NAMEOF('Patient Information'[Count 0-]), 7)  
0 }
```

# Hospitals and Cost Required Dax

A parameter to combine (no of patients, no of doctors, no of room, max rating)

```
1 Matrics = {  
2     ("No of Patient", NAMEOF('Cost and Recovery'[No of Patient]), 0),  
3     ("No of Doctors", NAMEOF('Cost and Recovery'[No of Doctors]), 1),  
4     ("No of Rooms", NAMEOF('Cost and Recovery'[No of Rooms]), 2),  
5     ("Max Rating", NAMEOF('Cost and Recovery'[Max Rating]), 3)  
6 }
```

A measure to calculate the Max Rating from the Recovery Rating Cloumn

```
1 Max Rating = MAX('Cost and Recovery'[RecoveryRating])
```

A Measure to calculate the number of Doctors for a hospital

```
1 No of Doctors = DISTINCTCOUNT('Hospital Information'[DoctorName])
```

# Hospitals and Cost Required Dax Continue...

A measure to calculate the average length of stay for a hospital

```
1 Average Length of Stay = AVERAGE('Cost and Recovery'[LengthOfStay])  
2
```

A measure to calculate the number of rooms in a hospital

```
1 No of Rooms = DISTINCTCOUNT('Hospital Information'[RoomNumber])
```

A measure to calculate the number of patients in a hospital

```
1 No of Patient = DISTINCTCOUNT('Patient Information'[PatientID])
```

# Diagnosis & Treatment Dashboard Required Dax

- The measure creates a summary table that combines the diagnosis and associated medications (from four medication columns) along with a count for each combination.
- This is done by filtering out blank medications for each column (Med1\_Name to Med4\_Name) and then unifying the results using the UNION function.

```
1 Medication_Summary =
2 UNION(
3     SELECTCOLUMNS(
4         FILTER('Diagnosis and Treatment Described', NOT(ISBLANK('Diagnosis and Treatment Described'[Med1_Name]))),
5         "Diagnosis", 'Diagnosis and Treatment Described'[Diagnosis],
6         "Medication", 'Diagnosis and Treatment Described'[Med1_Name],
7         "Count", 1
8     ),
9     SELECTCOLUMNS(
10        FILTER('Diagnosis and Treatment Described', NOT(ISBLANK('Diagnosis and Treatment Described'[Med2_Name]))),
11        "Diagnosis", 'Diagnosis and Treatment Described'[Diagnosis],
12        "Medication", 'Diagnosis and Treatment Described'[Med2_Name],
13        "Count", 1
14    ),
15    SELECTCOLUMNS(
16        FILTER('Diagnosis and Treatment Described', NOT(ISBLANK('Diagnosis and Treatment Described'[Med3_Name]))),
17        "Diagnosis", 'Diagnosis and Treatment Described'[Diagnosis],
18        "Medication", 'Diagnosis and Treatment Described'[Med3_Name],
19        "Count", 1
20    ),
21    SELECTCOLUMNS(
22        FILTER('Diagnosis and Treatment Described', NOT(ISBLANK('Diagnosis and Treatment Described'[Med4_Name]))),
23        "Diagnosis", 'Diagnosis and Treatment Described'[Diagnosis],
24        "Medication", 'Diagnosis and Treatment Described'[Med4_Name],
25        "Count", 1
26    )
27 )
28
```



# Diagnosis & Treatment Dashboard Required

## Dax Continue...

- The Medication\_Count measure will return the total number of non-blank medication entries across all the columns (Med1\_Name, Med2\_Name, Med3\_Name, and Med4\_Name), essentially summarizing the total count of medications prescribed for all diagnoses.

```
|1 Medication_Count = COUNTROWS(Medication_Summary)  
|2
```

# Data Modeling

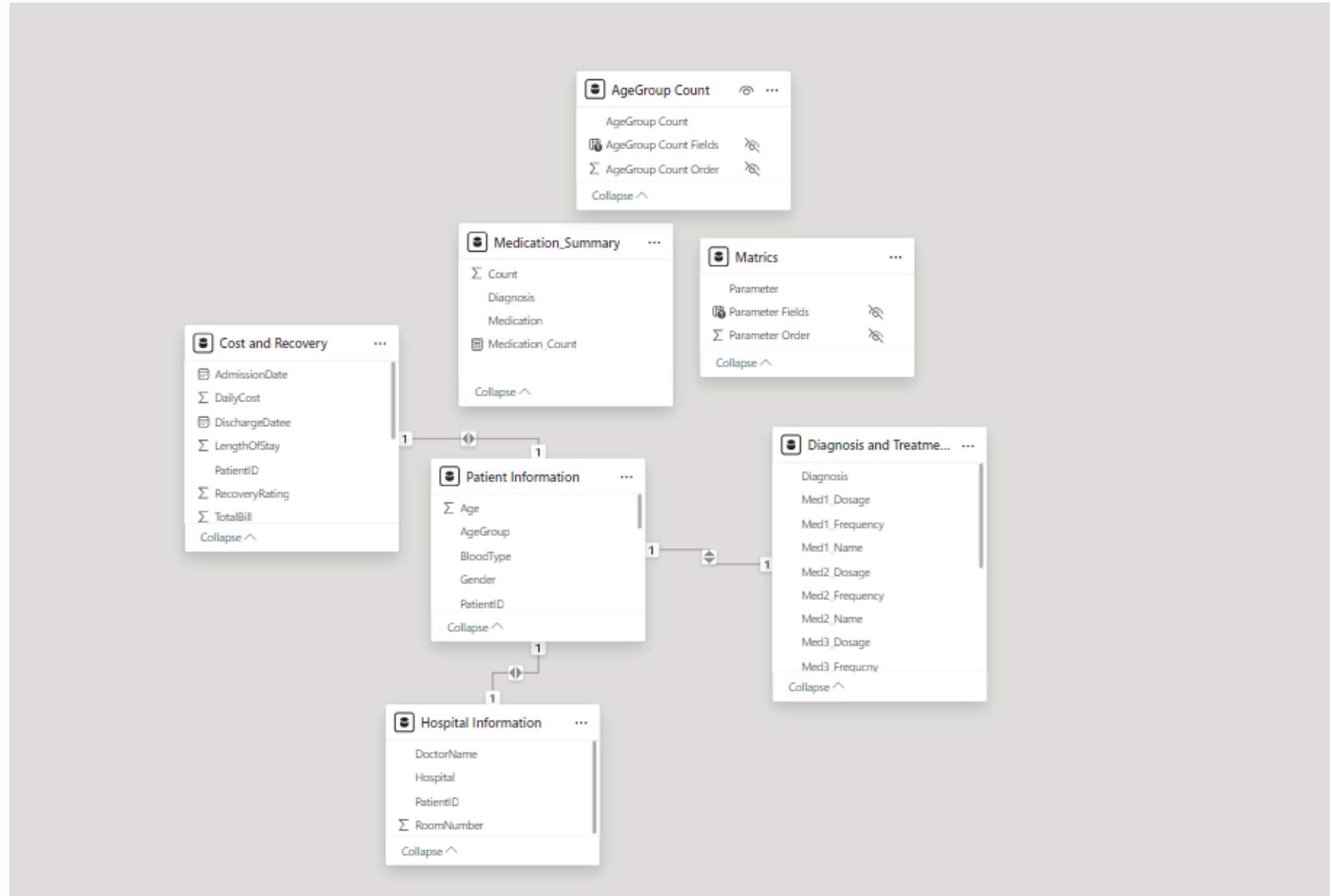
# Relational Tables



The tables were merged using the PatientID column through a full outer join, ensuring that all patient records from both datasets were included.

Cost and Recovery (PatientID)		Patient Information (PatientID)	Active
Diagnosis and Treatment Desc...		Patient Information (PatientID)	Active
Hospital Information (PatientID)		Patient Information (PatientID)	Active

# Model View



# Visualizations and Dashboards

# Creating Visualizations and Dashboards



01

**Visualize key metrics**

- Leverage Power BI's extensive chart and graph options to create visually compelling representations of healthcare data.

02

**Customize Dashboards**

- Tailor dashboards to specific user needs, highlighting the most relevant insights for clinicians and patients

03

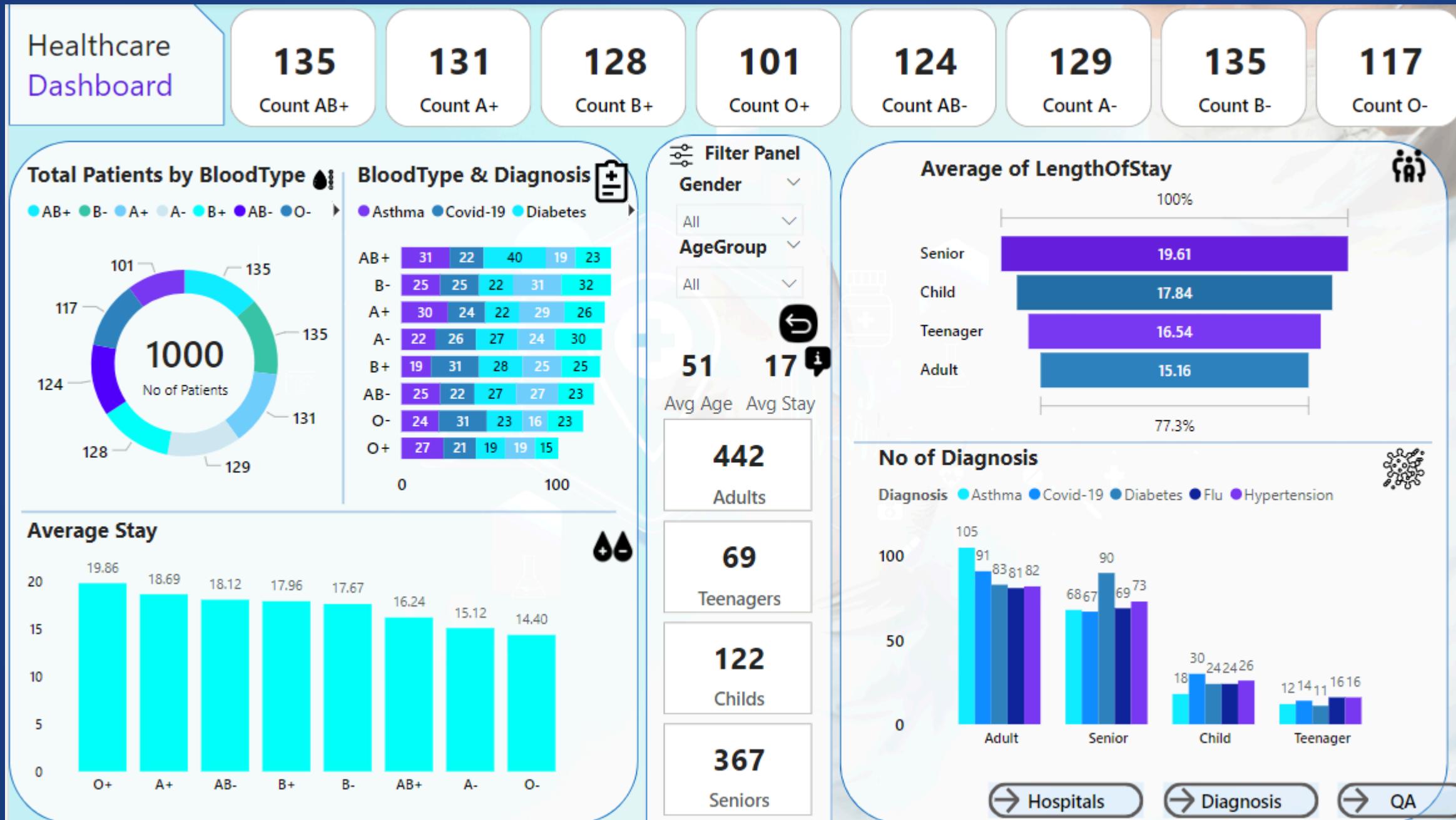
**Enable Interactivity**

- Empower users to explore data, filter, and drill down, fostering a deeper understanding of healthcare trends and patterns.



# Patients Dashboard

Total patients with blood type and diagnosis



Average recovery period for each blood type

Total patients for each blood type

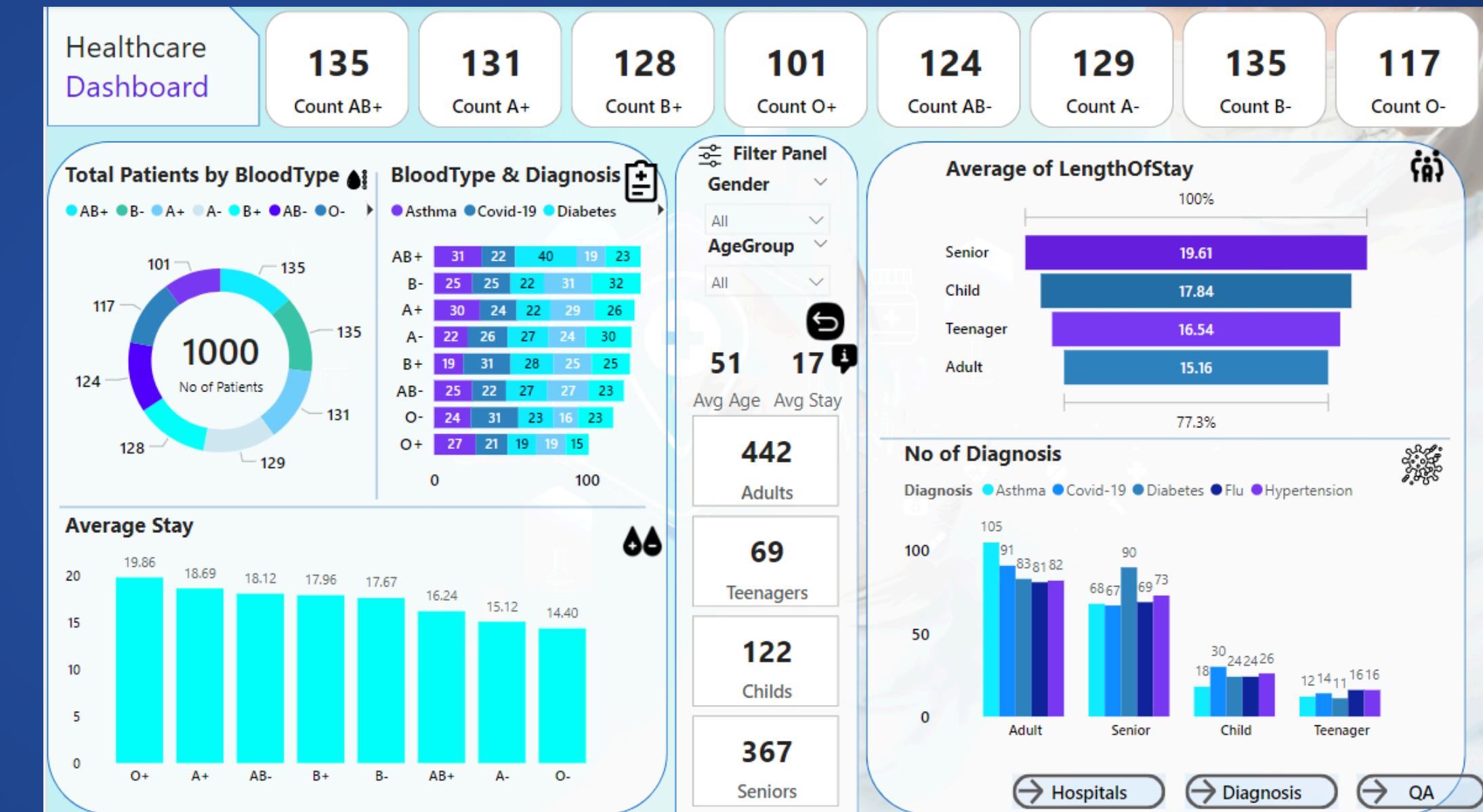
Average recovery period for each group of ages

Total diagnosis for each group of ages

# Patients Dashboard, Continue...

## Filter panel

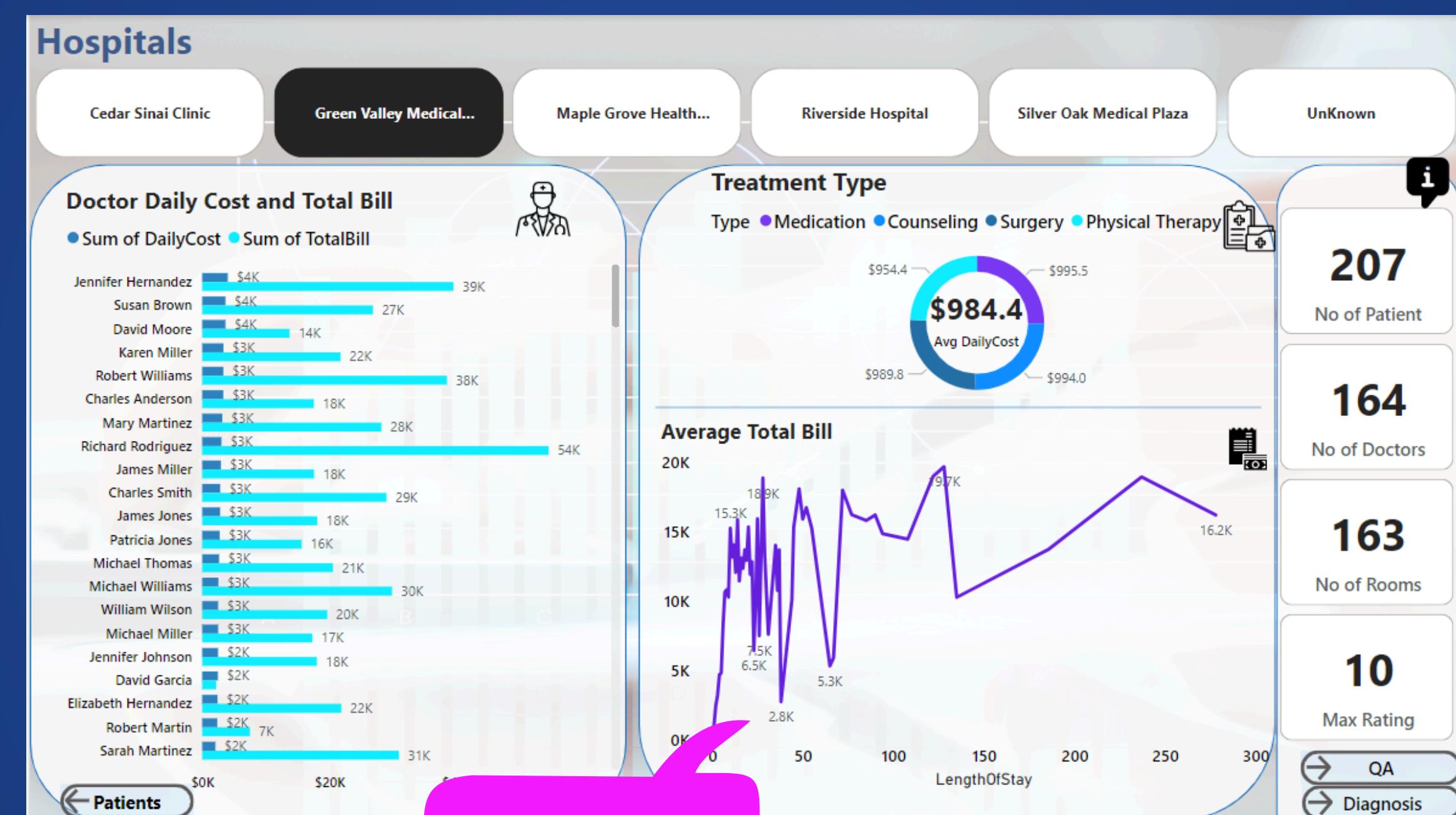
- Gender: male, female, others
- Group of ages: child, teenagers, adults, seniors



# Hospitals Dashboard

Hospitals  
slicer

Cluster bar show  
daily cost and  
total bill for each  
doctor.



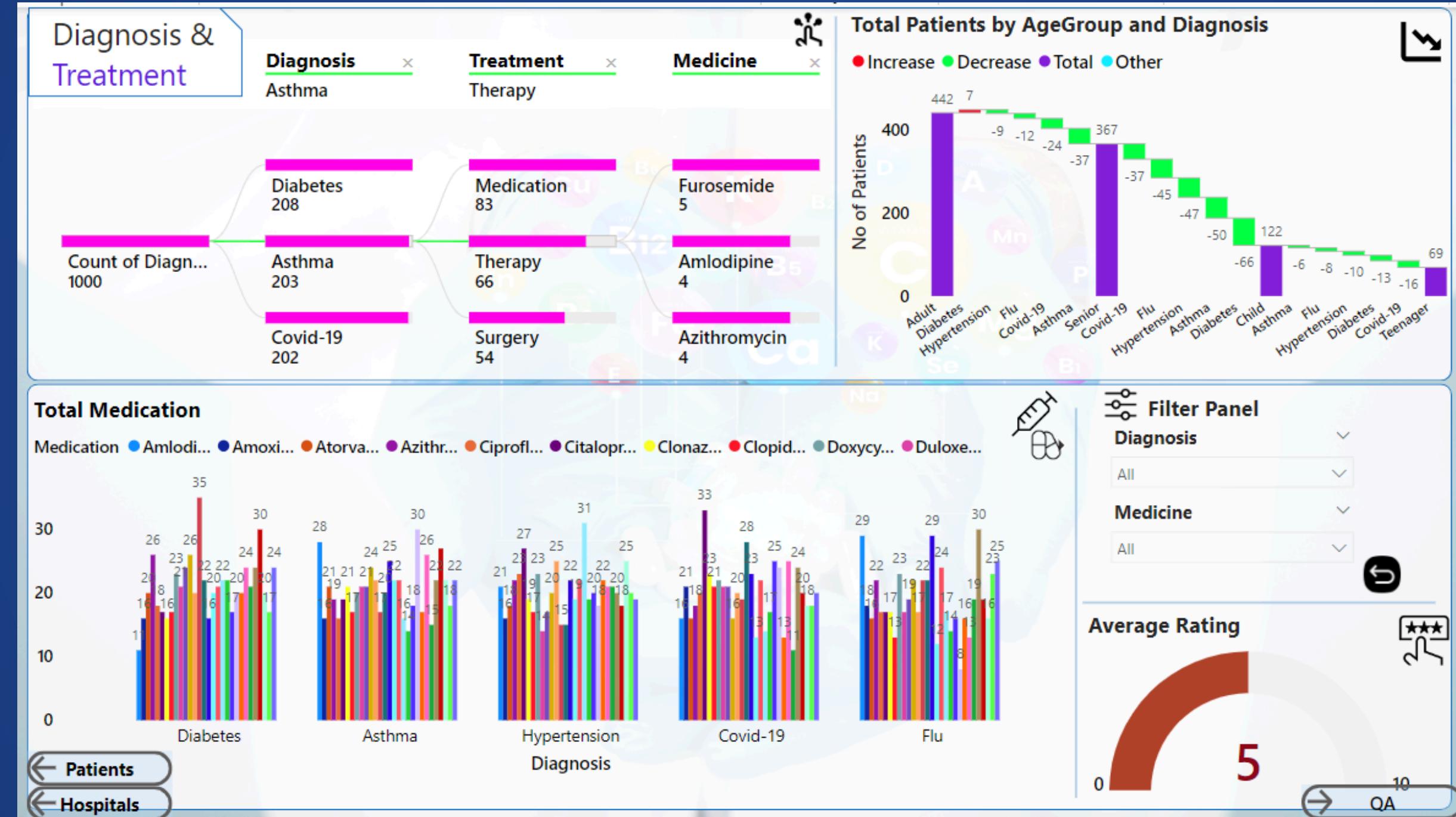
Line chart show  
average total bill  
after recovery  
period.

Pie chart show  
average daily  
cost for each  
diagnosis.

Cards show total  
patients, total  
doctors, total  
rooms, max  
rating.

# Diagnosis & Treatment Dashboard

Tree shows the treatment details for each diagnosis



Waterfall chart shows the increase and decrease of diagnosis for each group of ages

Clustered column shows what is the most prescribed medication

# Questions and Answers Dashboard

Chart specify for answering user questions

The screenshot shows a 'Q&A' dashboard with a teal header and a white search bar containing the question: "what is the medication for Flu". To the left of the search bar is a dropdown menu titled 'Medication' listing various drugs. Below the search bar is a hexagonal grid of medical icons. The icons include a brain, kidneys, heart, lungs, a plus sign, a test tube, a stomach, a neuron, a shield, and an atom symbol. At the bottom of the dashboard are three navigation buttons: 'Patients', 'Hospitals', and 'Diagnosis'.

- Medication
- Amlodipine
- Amoxicillin
- Atorvastatin
- Azithromycin
- Ciprofloxacin
- Citalopram
- Clonazepam
- Clopidogrel
- Doxycycline
- Duloxetine
- Escitalopram
- Fluoxetine
- Furosemide
- Gabapentin
- Hydrochlorothiazide
- Ibuprofen
- Insulin
- Levothyroxine
- Lisinopril
- Loratadine

# Analysis of Treatment Costs

## High-Cost Treatment Categories

- Medication emerged as the costliest treatment, averaging \$10,195 per treatment, followed closely by therapy-related treatments.

## Individual Cost Outliers

- The most expensive treatment case was for Jennifer Wilsen, whose total bill amounted to \$98,530. Such high-cost cases are important outliers that hospitals must account for in their budgeting and resource allocation.

## Cost Insights

- By analyzing these costs, hospitals can focus on reducing expenses related to medications and look for more cost-effective solutions in other categories like therapy and surgery.



# Conclusion and Key Insights

## Hospital Performance

- Green Valley Medical Center had the highest admissions but lower recovery ratings, pointing to a potential overburdening of resources.
- Conversely, Riverside Hospital, with fewer patients, had the highest recovery rating.

## Recovery Trends

- Adult patients had the highest hospital admission rates and recovery ratings.
- Children had lower recovery ratings.

## Final Thoughts

- The insights gained from this Power BI analysis provide critical information for healthcare providers.
- Enabling them to optimize treatments, manage patient loads, and improve operational efficiencies.

Any  
Questions?

# Thanks