

MAVEN HOSPITAL CHALLENGE

 **Massachusetts General Hospital**
Founding Member, Mass General Brigham



How much is the average cost per encounter?
- Quarter to date

TOTAL COSTS	\$691,757
AVG COSTS PER ENCOUNTER	\$3,144
- 14.4%	

[More about costs](#)

How many patients have been admitted?
- Over time

TOTAL ADMISSIONS	3,457
TOTAL RE-ADMISSIONS	59.4% (310 patients)

[More about re-admissions](#)

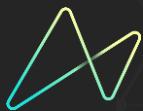
How long are patients staying in the hospital?
- Quarter to date

AVG DURATION OF A VISIT	42 minutes
AVG DURATION OF AN ADMISSION	5 hours, 11 minutes
- 3.5% - 9.3%	

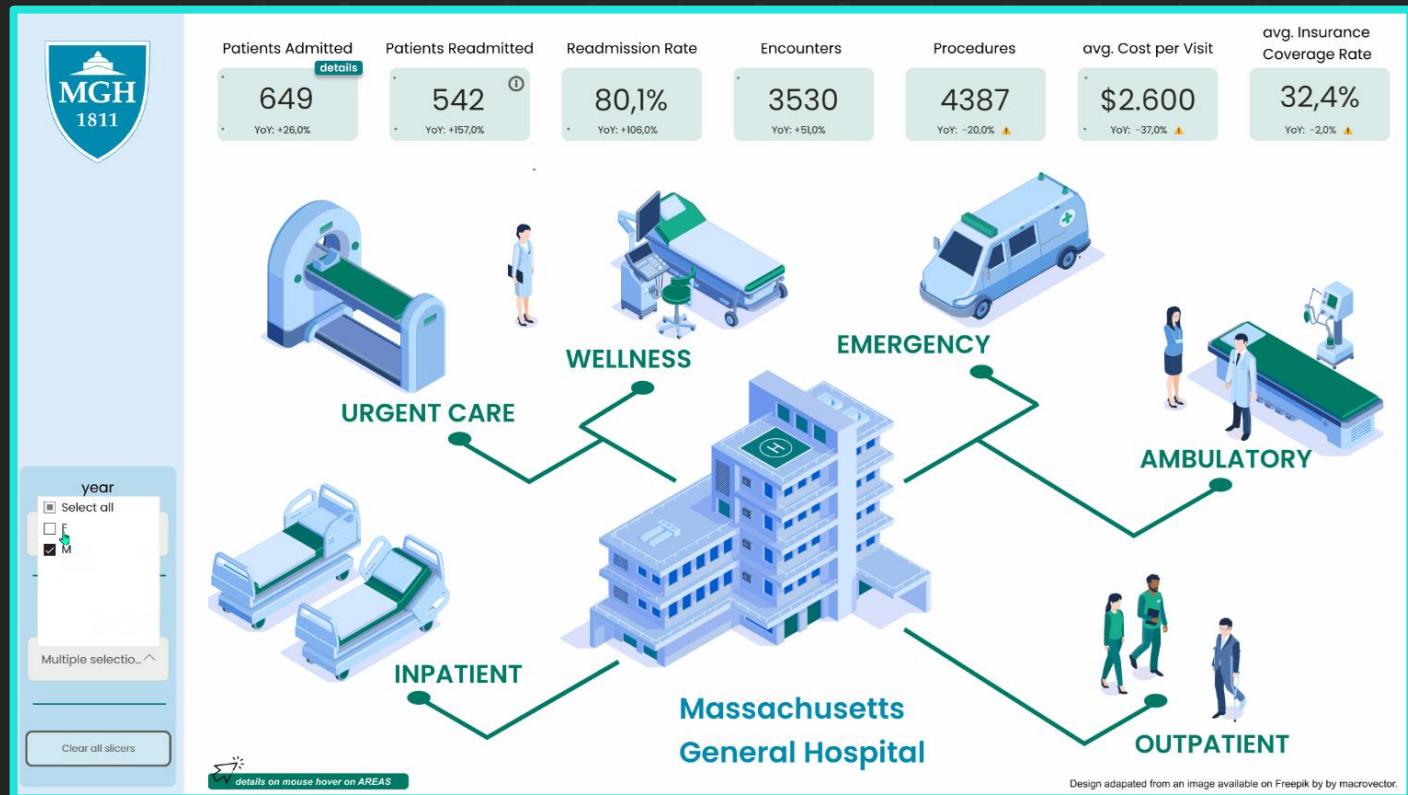
[More about duration](#)

Last update: February 5, 2022

Nicoline Van Dijk



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Marco Spinnicchia



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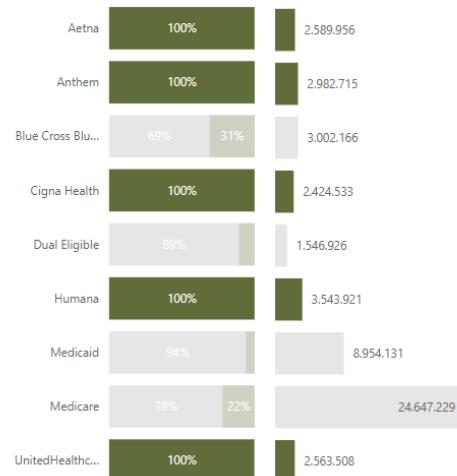
Massachusetts General Hospital

DETAILED ANALYSIS

Since 2011, five insurance providers have cost MGH millions by **not covering patients encounter costs at all**. Especially patients with high-cost encounters are often unable to pay the resulting bills, leading to significant losses for the hospital. We recommend MGH implements a program encouraging patients, of whom 9 out of 10 are readmissions, to switch to more reliable insurance providers. Patients with no insurance definitely need to be included in the program.

% of Costs not covered by insurance and their total costs

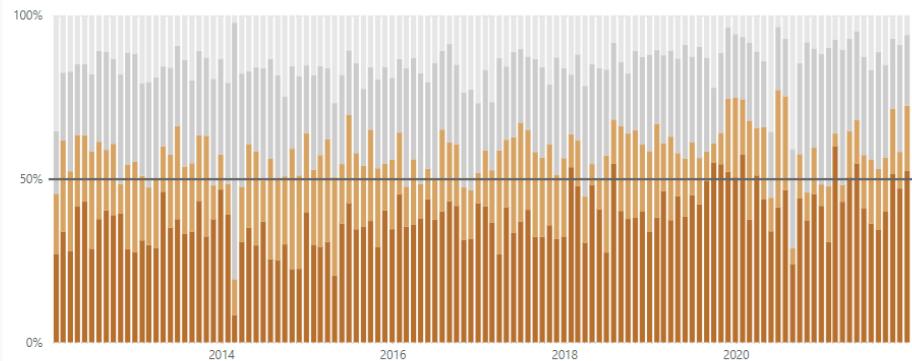
Patients with no insurance excluded - costs are at 49 Mio. USD



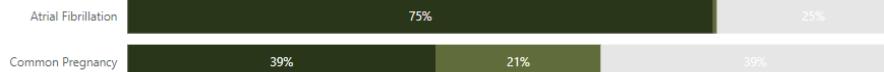
In nearly every month in the last ten years (2012-2021) the share of **procedure costs** associated with **Atrial Fibrillation** and **Common Pregnancy*** has accounted for more than 50% of the total procedure costs. Strong deviations from this trend were due to unexpected events such as "Patient encounter procedure" in February 2014 and "Septic Shock" in August 2020. We recommend further specializing in these two areas to optimize processes, enhance patient satisfaction, and increase revenue.

*Common pregnancy = Normal pregnancy

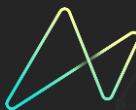
● Atrial Fibrillation ● Common Pregnancy ● No Description ● Other Reason



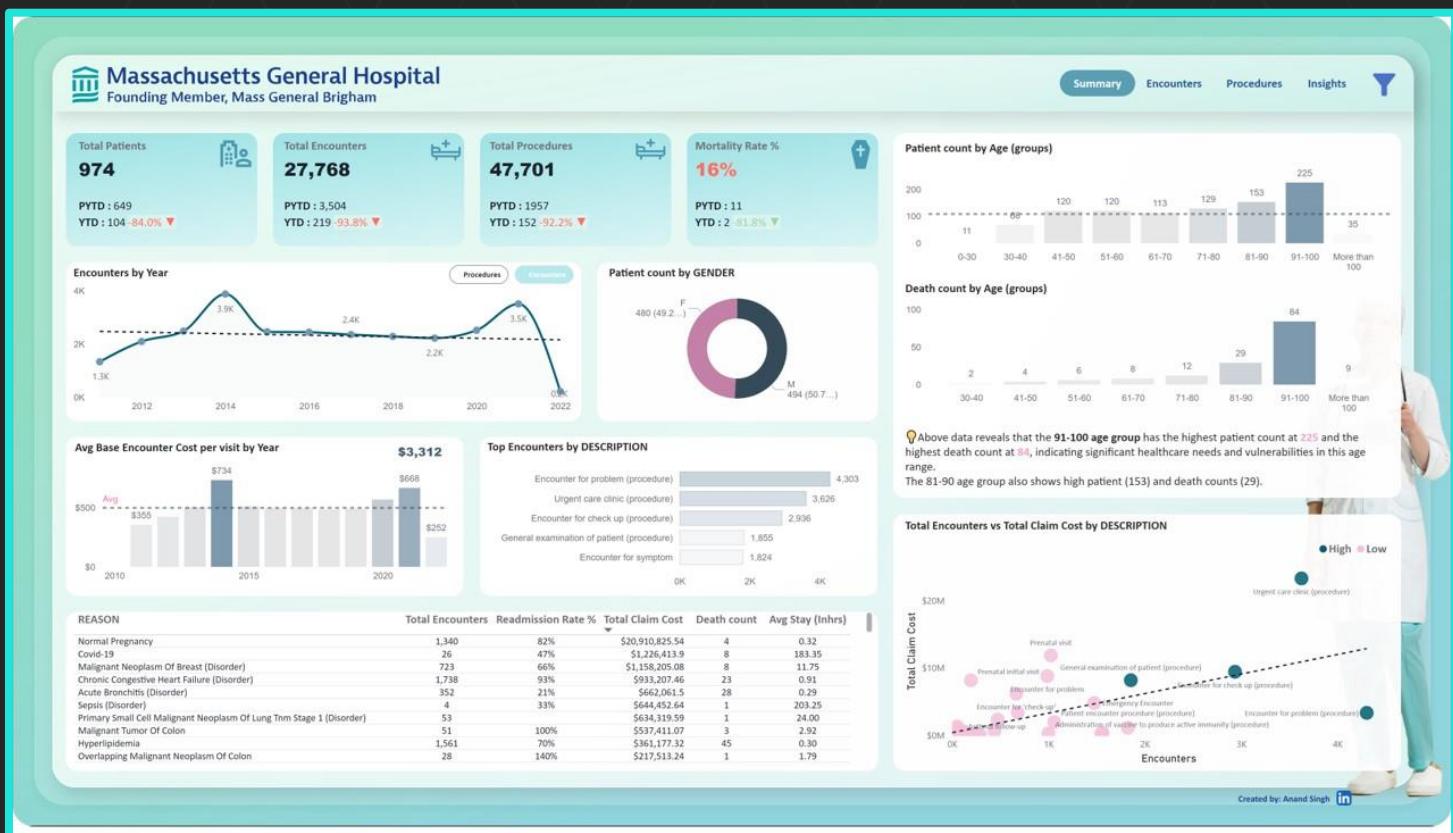
Upon deeper analysis, we observe significant financial risks associated with Atrial Fibrillation and Common Pregnancy procedures. Three out of four patients undergoing Atrial Fibrillation procedures (average cost \$22'000) have **no insurance**. Similarly, for Common Pregnancy procedures (average cost \$3'500), 39% of patients have **no insurance**, and an additional 21% have **low insurance**, meaning a provider who is known for not covering the costs. We recommend educating patients and encouraging them to choose a strong insurance that covers these expenses.



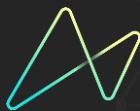
Michael Pason



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Anand Singh



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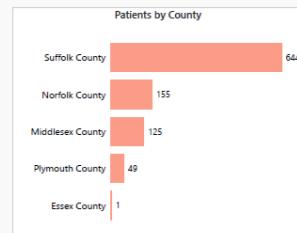
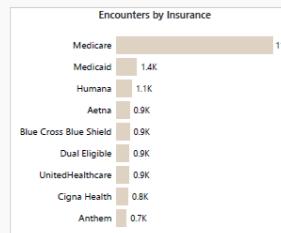
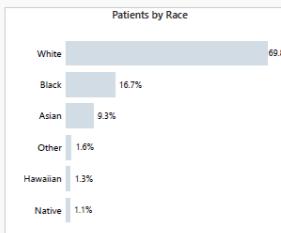
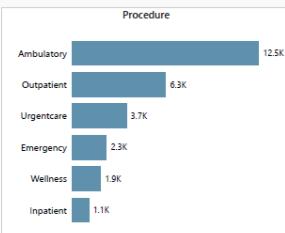
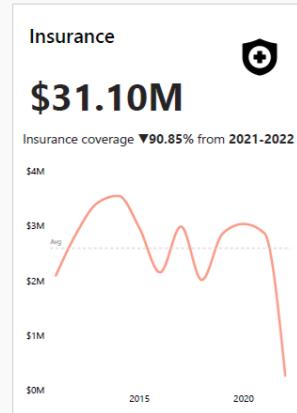
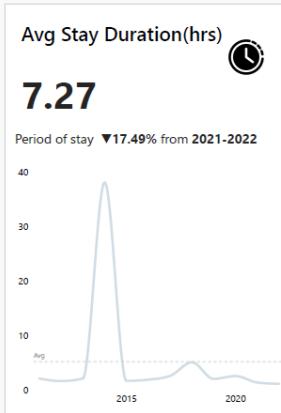
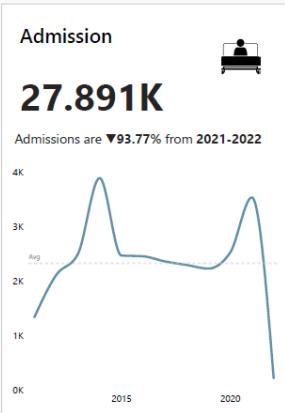


Massachusetts General Hospital (MGH).

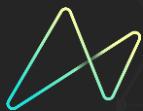
Maven Hospital Challenge

- At MGH, we recorded a total of **974 Patients**, with **80.4%** being **Non-Hispanic** and the remaining identified as **Hispanic**. The gender distribution included **494** males and **480** females.
- The total cost was **\$101.51M**. Of the approximately **28,000** procedures performed, **14,310** were covered by insurance. With mortality rate of **15.81%**.

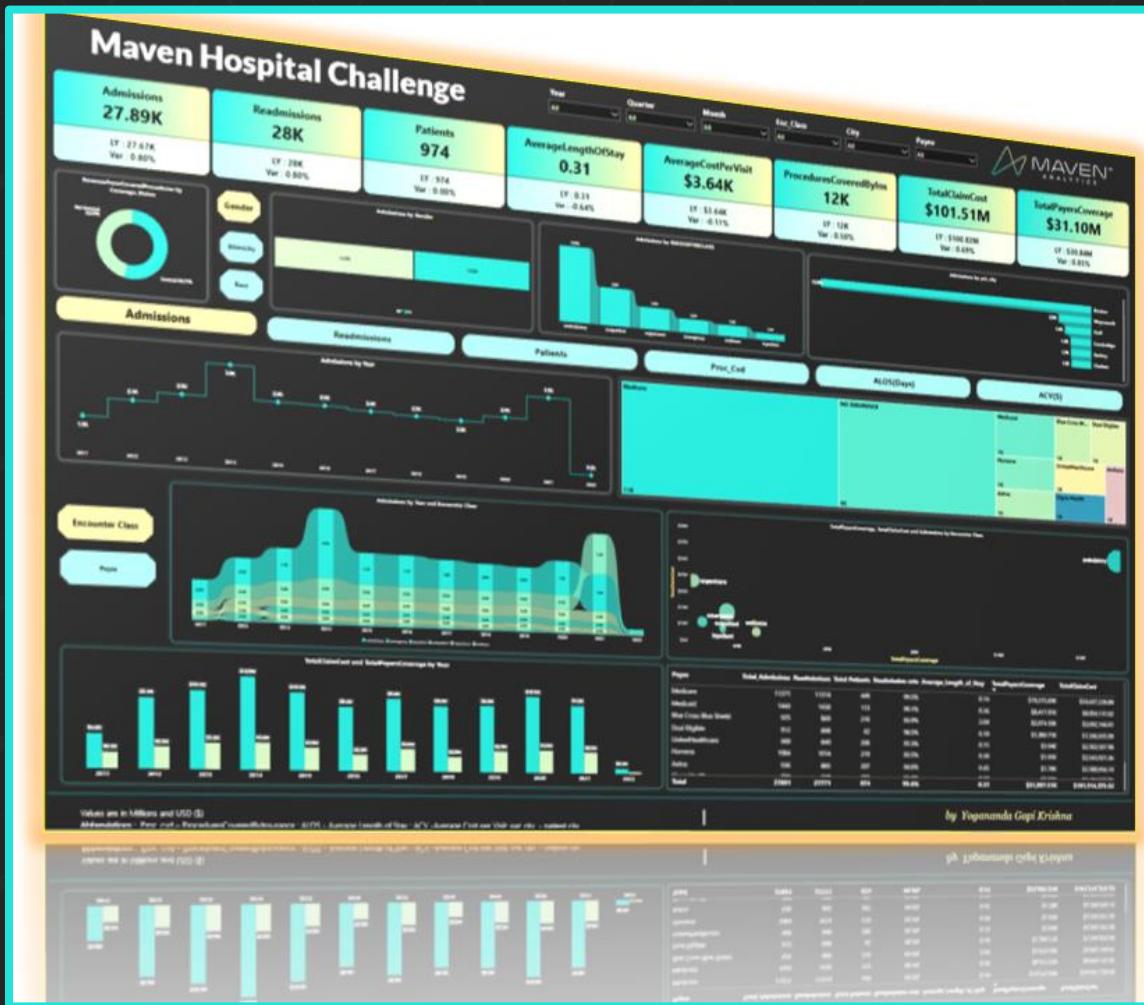
- The average insurance coverage at MGH was **\$1.1k**, with **51.3%** of the encounters having insurance. Among those insured, **36.65%** were **Whites**, **8.10%** were **Blacks**, and **4.61%** were **Asians**.
- Analysis shows that the highest number of admissions were recorded in **2014 and 2021**. The maximum recorded duration of stay was **38 hrs** in **2014**. Additionally, **2021** had the lowest average cost per visit, at **\$2.6k**.



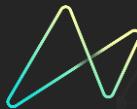
Shittu Oluwadamilare Pelumi



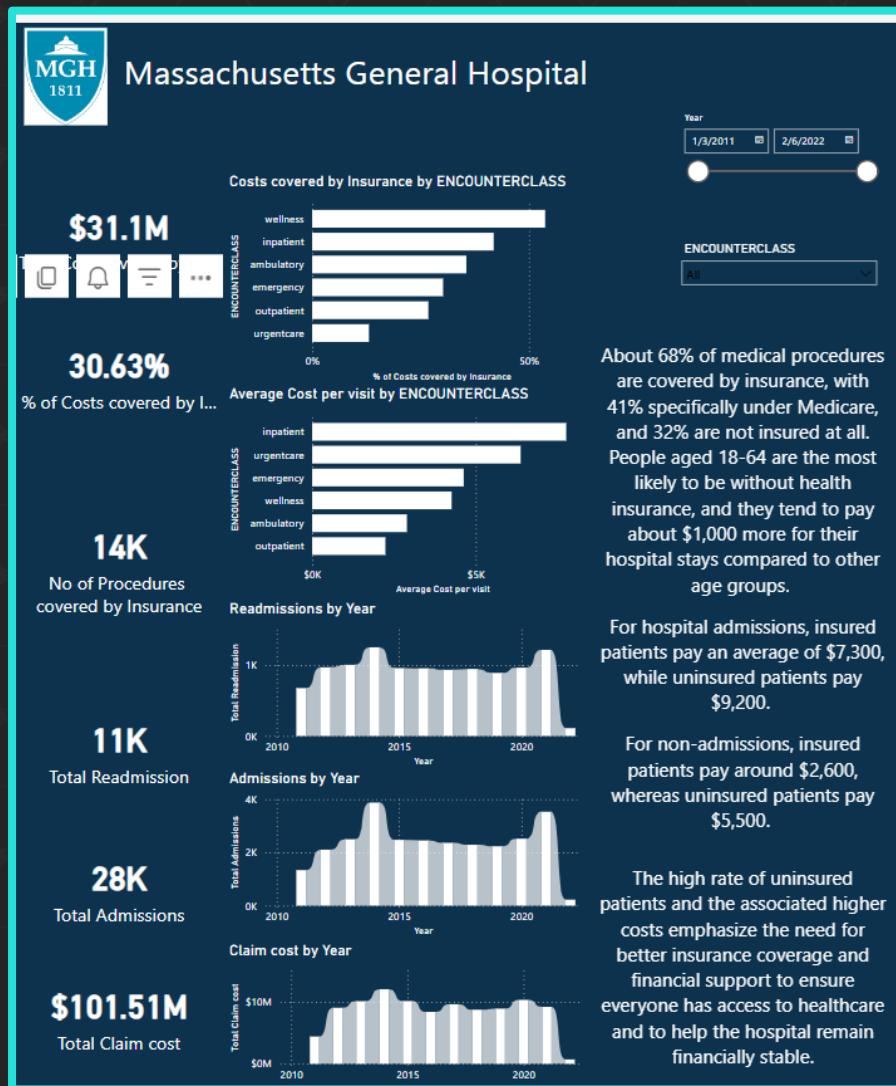
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Pampana Yoganandha Gopikrishna



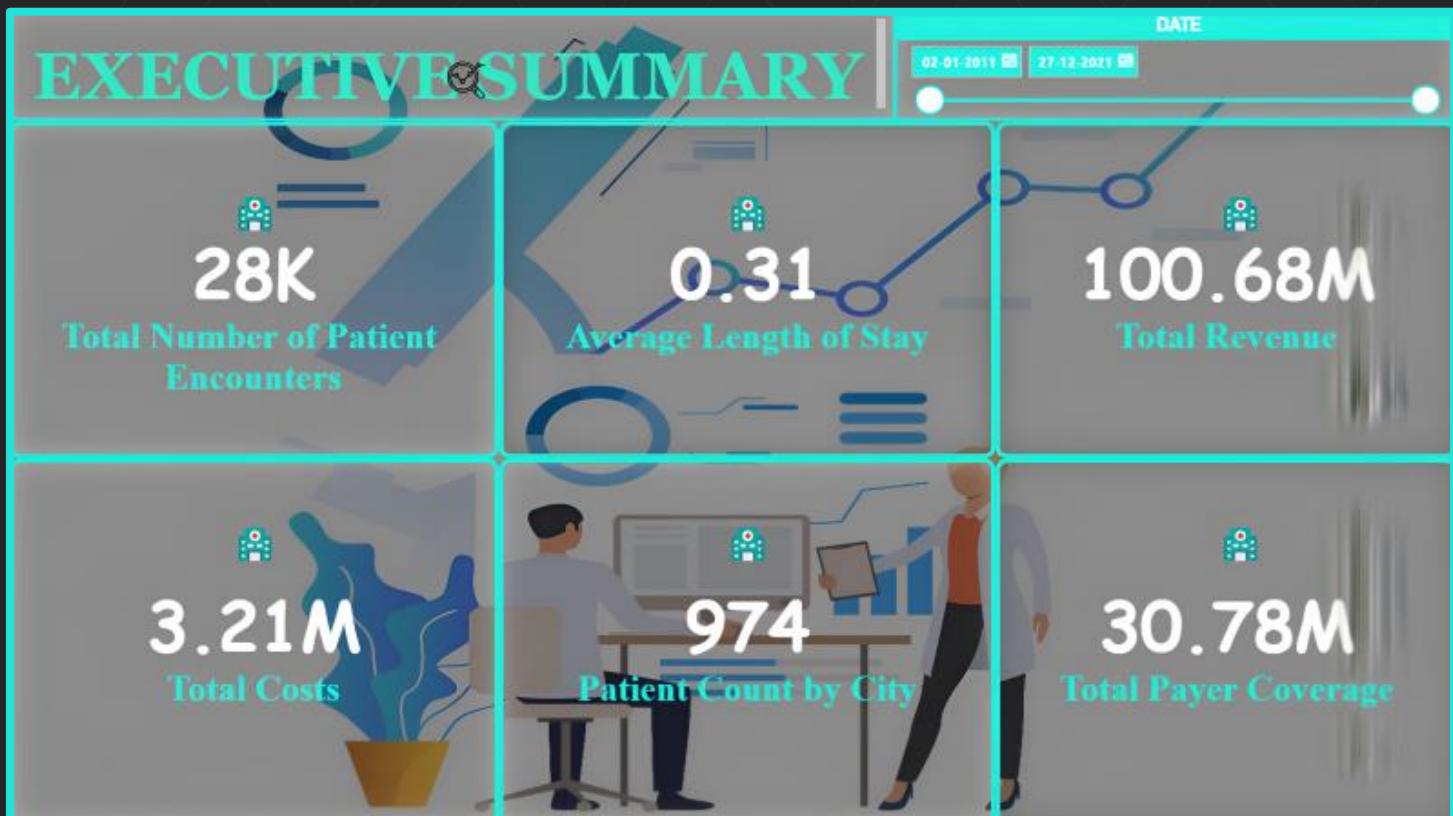
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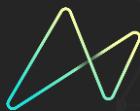
Koundinya A



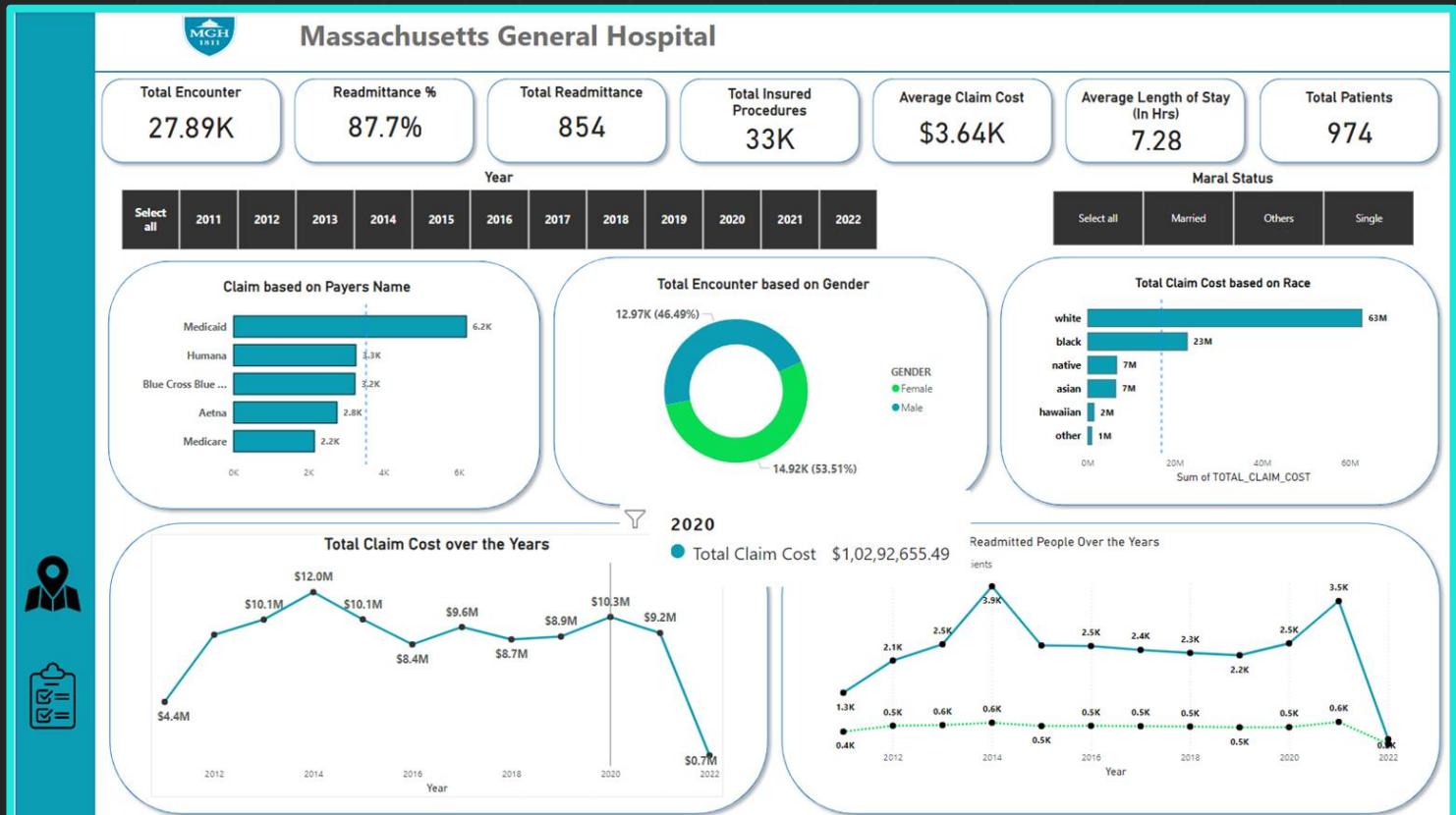
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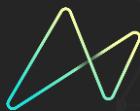
Subhasis Das



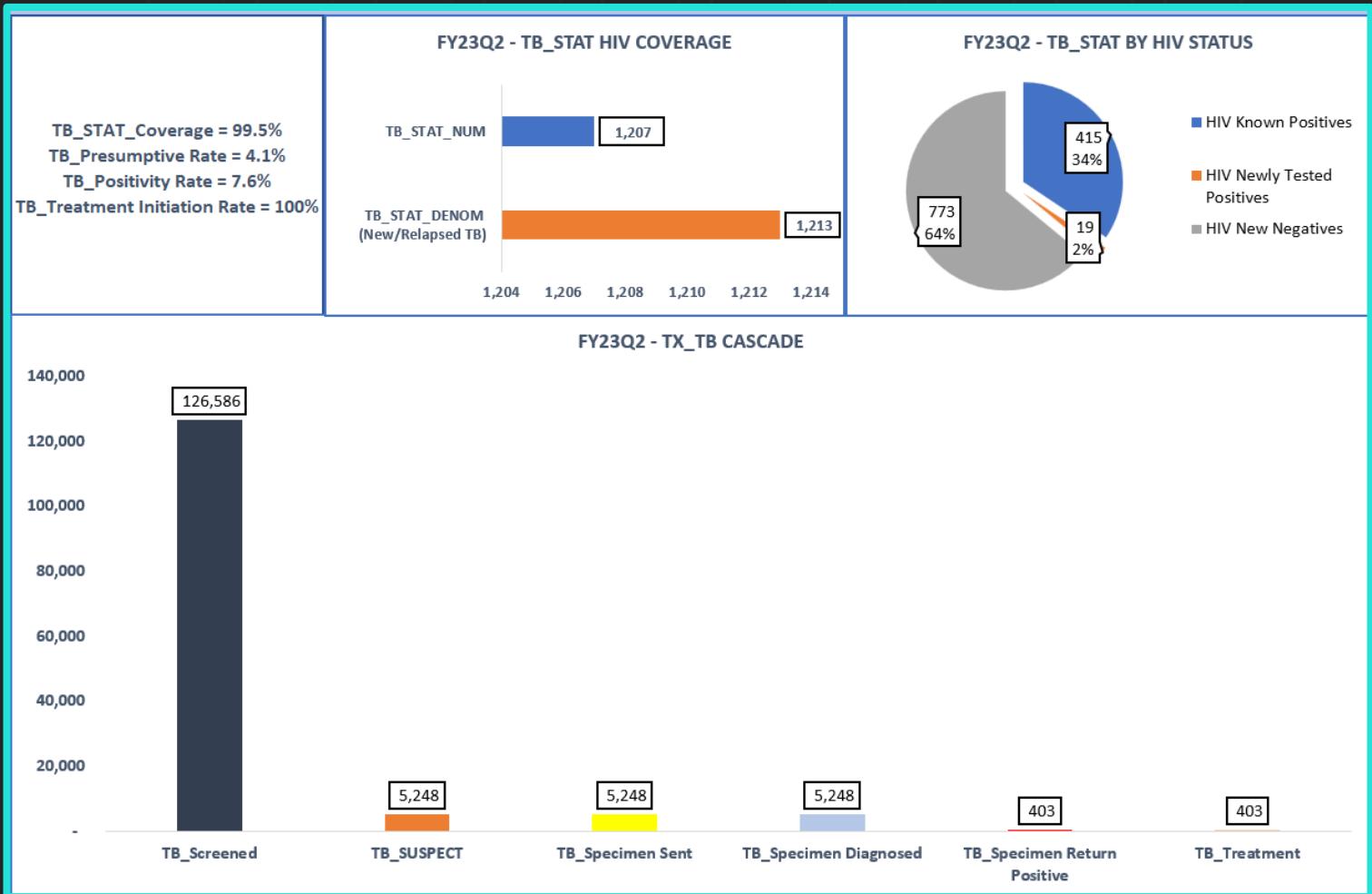
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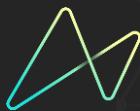
Varun A Menon



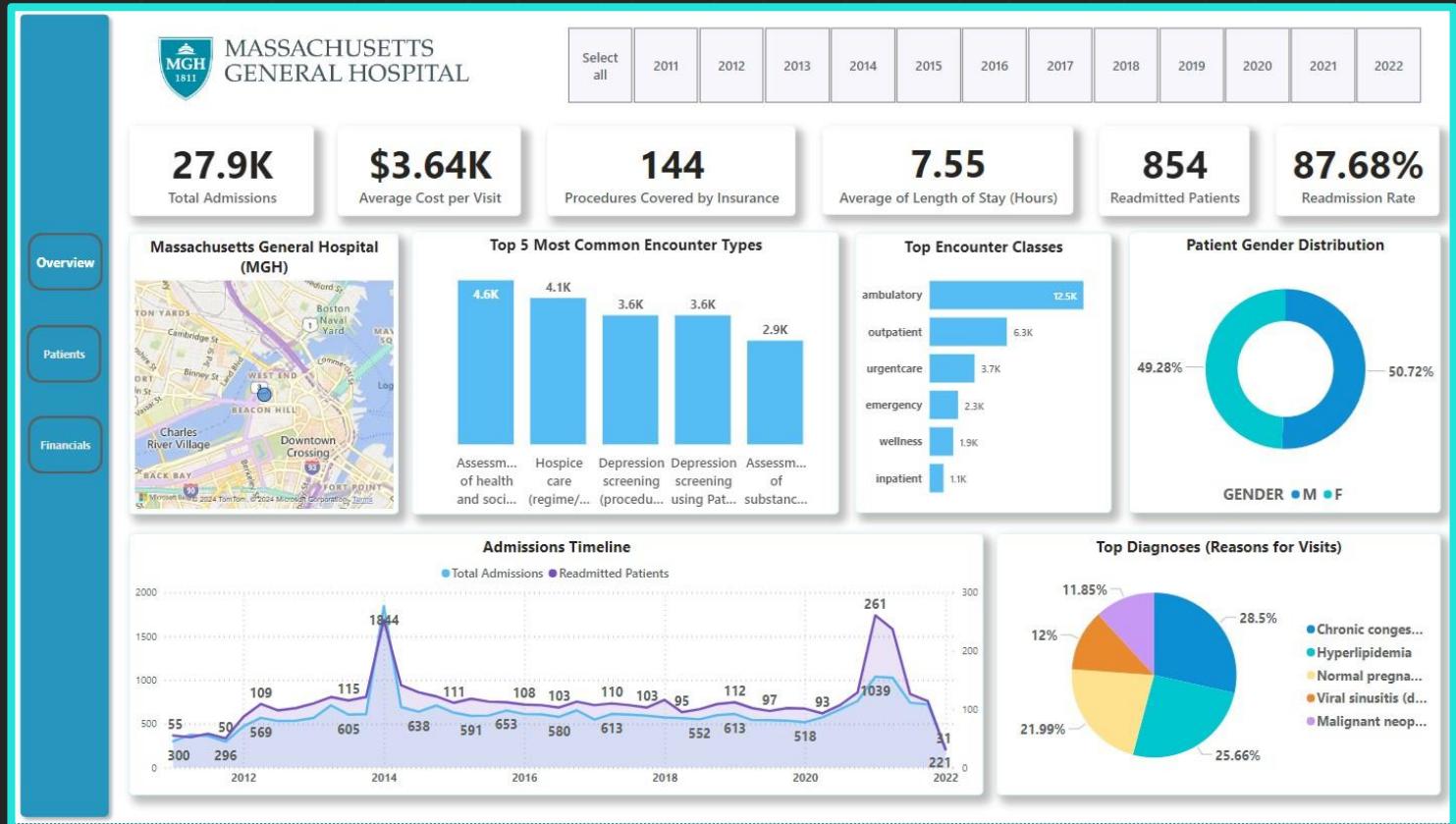
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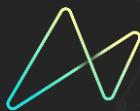
Hassan Mushi



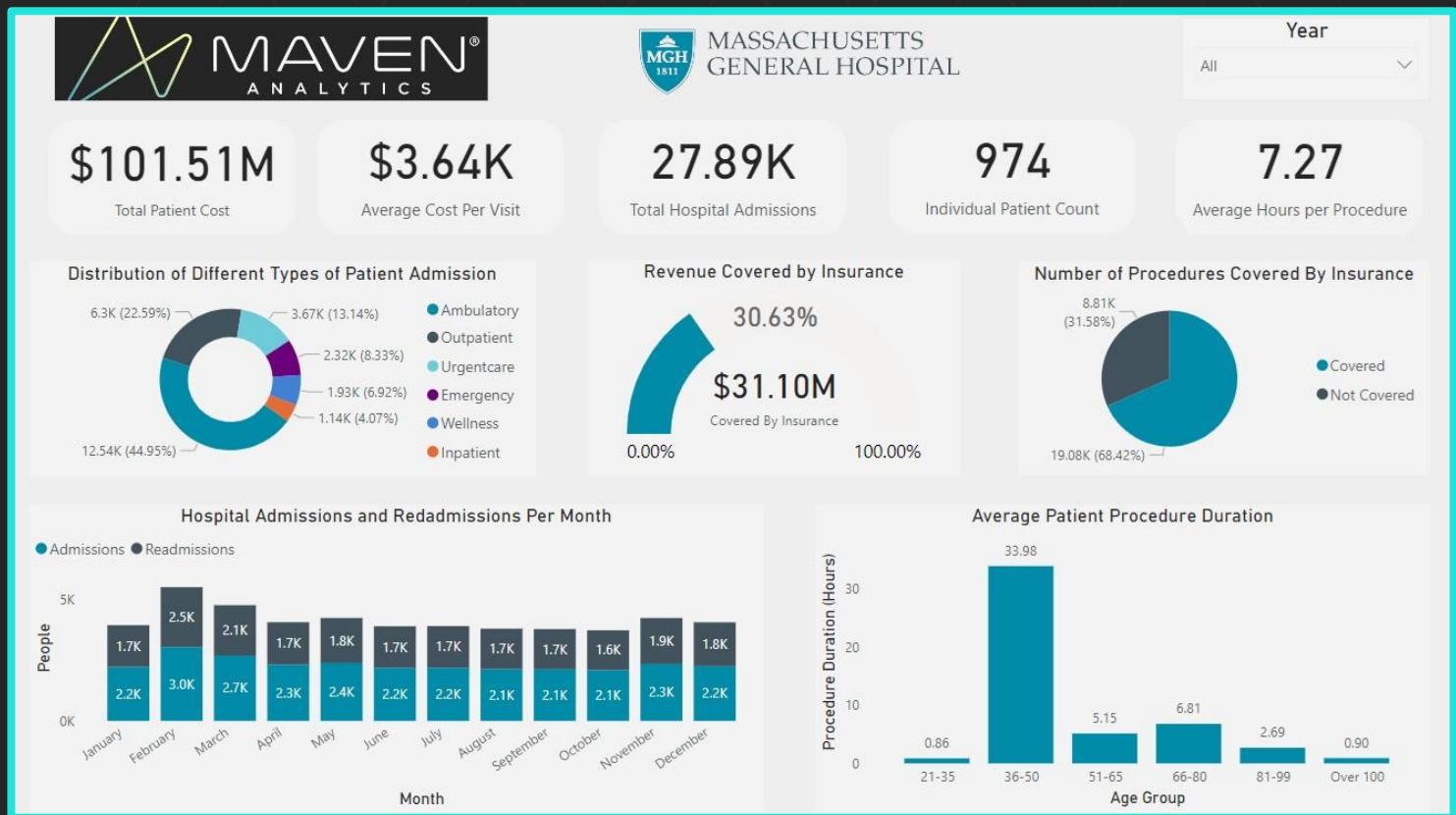
MAVEN HOSPITAL CHALLENGE



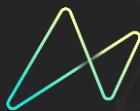
Devarshi Choudhury



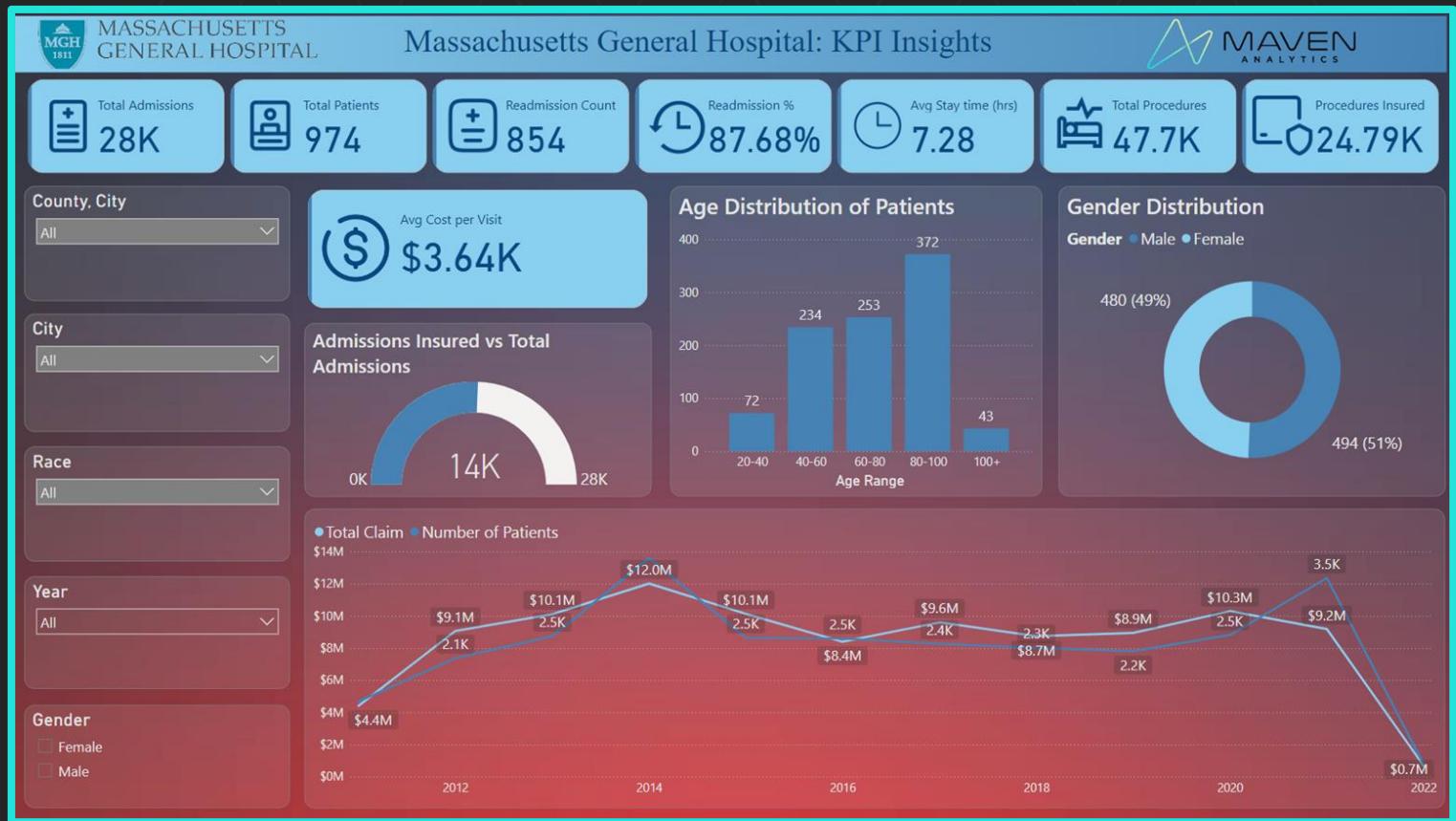
MAVEN HOSPITAL CHALLENGE



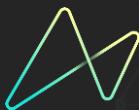
Jason Woods



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Garvit Kumbhat



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Maven Hospital Challenge

Massachusetts General Hospital
Jamil Ur Rehman
Analytics Consultant

27.89K

Total Admissions

974

No. of Patients

\$101.51M

Total Claim Cost

\$3.64K

Avg. cost per visit

\$31.10M

Insured Amount

47.70K

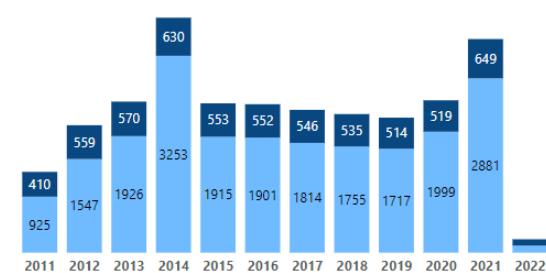
Total Procedures

15.10K

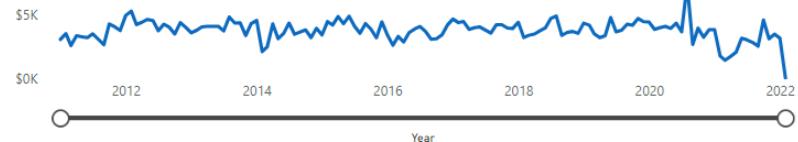
Uninsured Procedures

Admissions and Readmissions over the Years

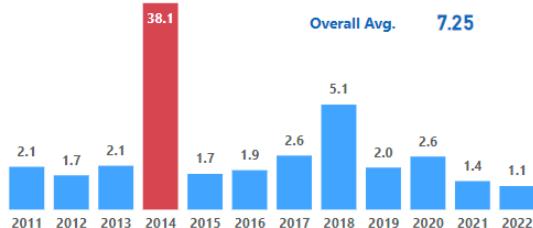
● Readmissions ● New Admissions



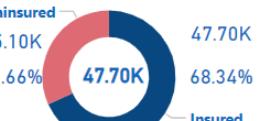
Average Cost per visit over time



Average Annual Length Of Patient Stay (Hours)



Total Procedures



Claim Summary By Payer Group

NAME	Total Admissions	Total Procedures	Total Claim Cost
Actua	936.00	1,457.00	\$2,589,956.70
Anthem	704.00	1,203.00	\$2,982,715.03
Blue Cross Blue Shield	925.00	1,512.00	\$3,002,166.01
Cigna Health	809.00	1,599.00	\$2,424,532.91
Dual Eligible	912.00	1,162.00	\$1,546,925.99
Humana	1,084.00	1,999.00	\$3,543,921.31
Medicaid	1,443.00	2,893.00	\$8,954,131.02
Medicare	11,371.00	19,512.00	\$24,647,228.85
NO_INSURANCE	8,807.00	15,102.00	\$49,259,290.11
UnitedHealthcare	900.00	1,262.00	\$2,563,507.98
Total	27,891.00	47,701.00	\$101,514,375

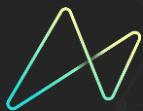
Total Patients



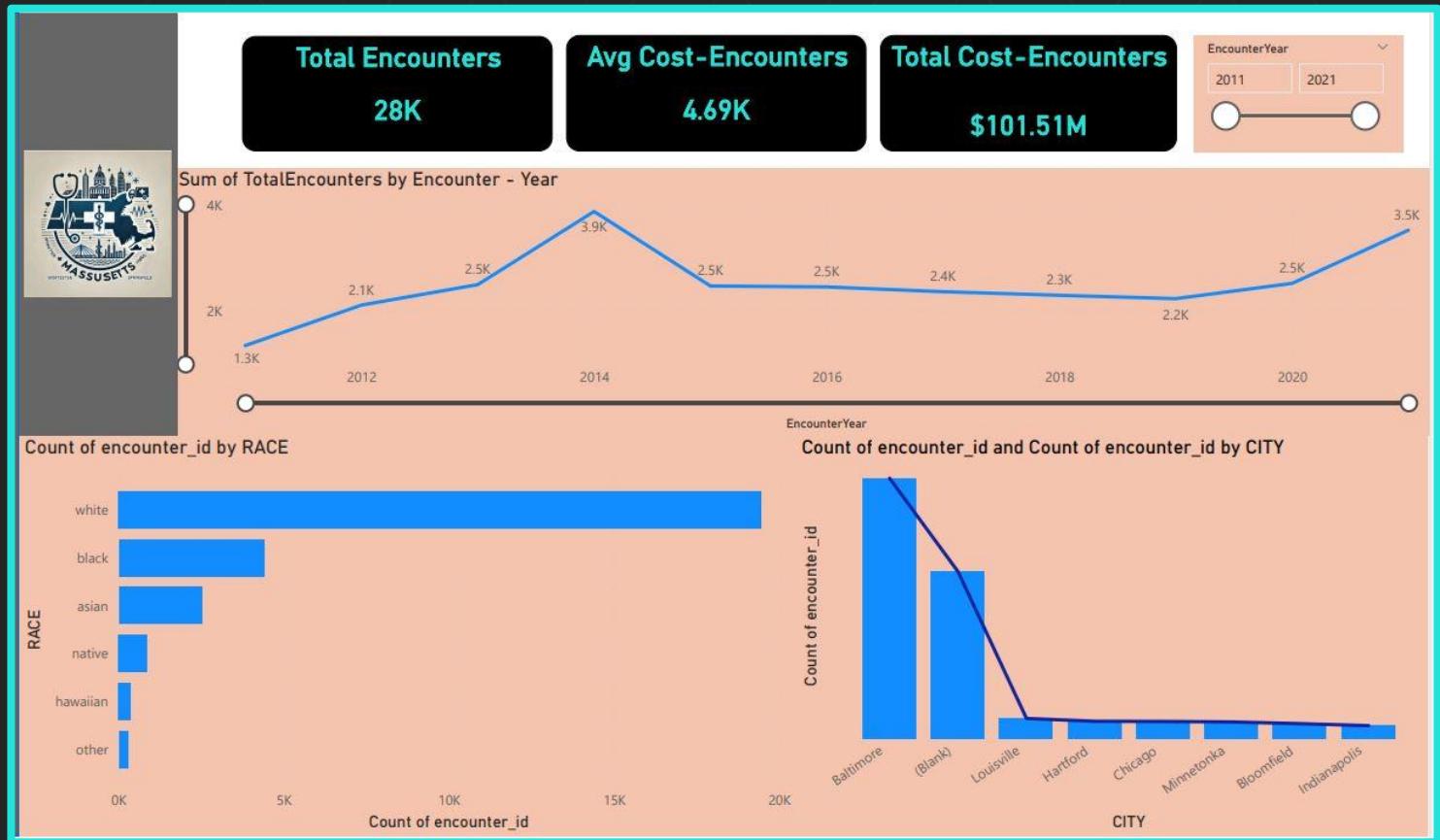
Most Applied Procedure

Assessment of health and social care needs (procedure) **4.60K**

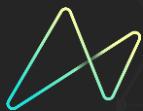
Jamil Ur Rehman



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Ankita Nayak

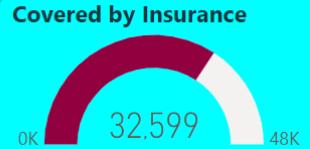


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Dashboard **Massachusetts General Hospital** 

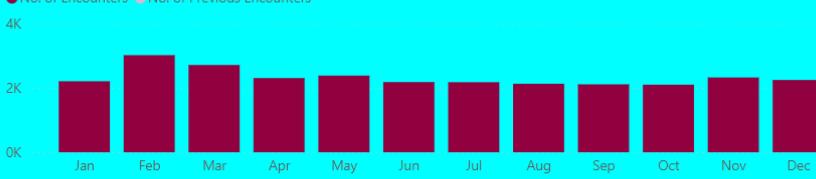
Overview **Patients**

Procedures **47,701** **AVG Stay Time** **7.27 Hours** **Encounters** **27,891** **AVG Visit Cost** **\$3,640**

Covered by Insurance 

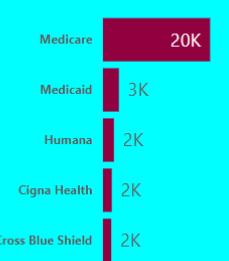
Encounters Trend

● No. of Encounters ● No. of Previous Encounters



Month	No. of Encounters	No. of Previous Encounters
Jan	~2.2K	~3.5K
Feb	~2.4K	~3.8K
Mar	~2.3K	~3.7K
Apr	~2.2K	~3.6K
May	~2.2K	~3.6K
Jun	~2.2K	~3.5K
Jul	~2.2K	~3.4K
Aug	~2.2K	~3.3K
Sep	~2.2K	~3.2K
Oct	~2.2K	~3.1K
Nov	~2.2K	~3.0K
Dec	~2.2K	~2.9K

Insurance Provider

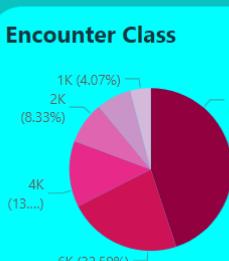


Insurance Provider	No. of Encounters
Medicare	20K
Medicaid	3K
Humana	2K
Cigna Health	2K
Blue Cross Blue Shield	2K

Year

Data Source: Maven Analytics
Designed by: Noel Jr. Gallo

Encounter Class

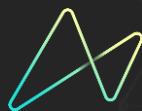


Encounter Class	Percentage
ambulatory	44.95%
outpatient	22.59%
urgentcare	13.33%
emergency	8.33%
wellness	4.07%
inpatient	1.44%

Encounter Description

DESCRIPTION	#Encounters	%Change
Encounter for problem (procedure)	4,308	
Urgent care clinic (procedure)	3,633	
Encounter for check up (procedure)	2,950	
General examination of patient (procedure)	1,880	

Noel Jr. Gallo



MAVEN HOSPITAL CHALLENGE

MAVEN ANALYTICS

MGH Patient Records

+

Ethnicity

Marital Status

Gender

Race

8/12/2011 2/5/2022

#Encounters

27,046
Total Admitted

16,454
Total Readmitted

60.84%
% Readmitted

Length of stay

Cost

Insurance Coverage

#Admitted by Age

over 90 (16,...)
81 to 90 (6K,...)
61 to 80 (5K,...)
19 to 60 (9K,...)

#Encounters by Date

1,843 (2015)
590
553
517
221 (2020)

Detailed #Encounters by Encounter Class and Description

Encounter Class	Admitted	Readmitted
ambulatory	12,111	7,669
emergency	2,285	1,518
inpatient	1,086	546
outpatient	6,100	3,571
urgentcare	3,648	2,749
wellness	1,816	401
Total	27,046	16,454

#Encounter by Encounter Class

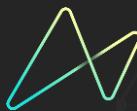
Admitted (blue) Readmitted (dark blue)

Encounter Class	Admitted	Readmitted
ambulatory	4.4K	7.7K
outpatient	2.5K	3.6K
urgentcare	0.9K	2.7K
emergency	0.8K	1.5K
wellness	1.4K	0.4K
inpatient	0.5K	0.5K

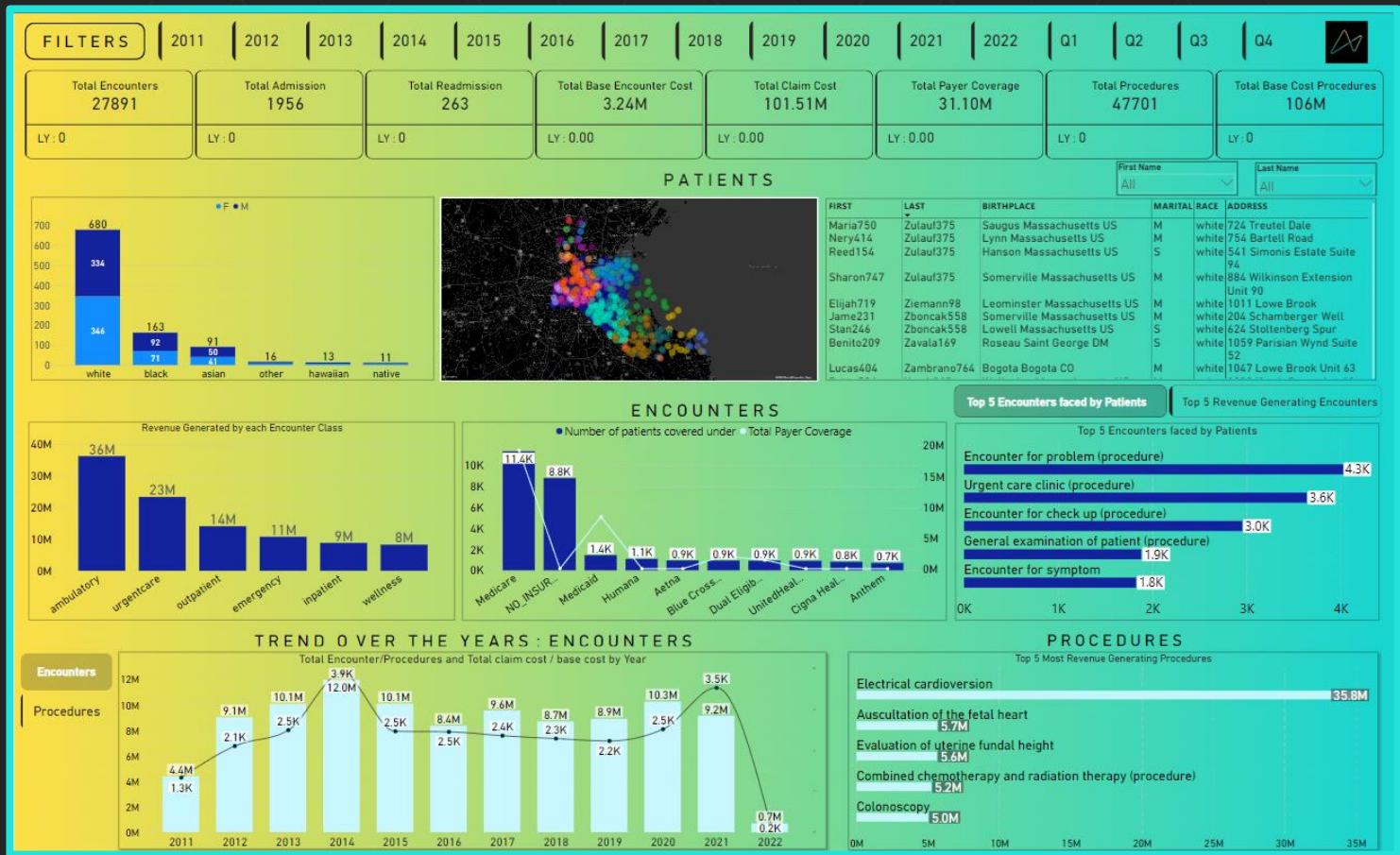
#Encounters by Encounter Class and Time Range

Encounter Class	0 a.m to 3 a.m	12 a.m to 3 p.m	3 a.m to 6 a.m	3 p.m to 6
ambulatory	1,728	1,579	1,436	
emergency	268	480	139	
inpatient	130	150	141	
outpatient	639	951	937	
urgentcare	137	660	457	
wellness	196	291	229	
Total	3,098	4,111	3,339	

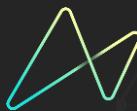
Minh Phan



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Harshvardhan Patil



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Massachusetts General Hospital | Overview



Select Year

- (All)
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022

Contact



Encounters	27,891
Procedures Completed	41,031

Total Patients	974
Repeat Patients	854

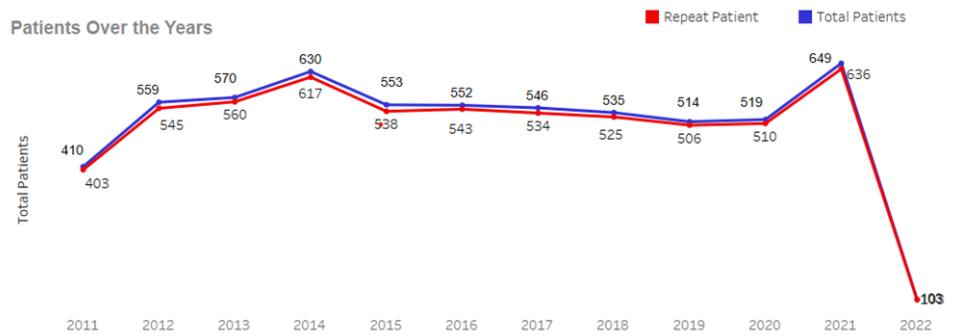
Insured Patients	727
Avg Stay Duration	7 Hours

Unique Procedures	152
Avg Cost per Visit	\$2,525

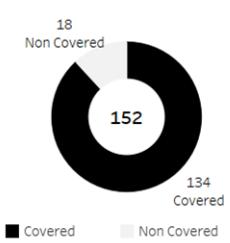
Total Encounters of	202,327
Hours	436 Minutes

Total Procedures of	26,512
Hours	33.26 Minutes

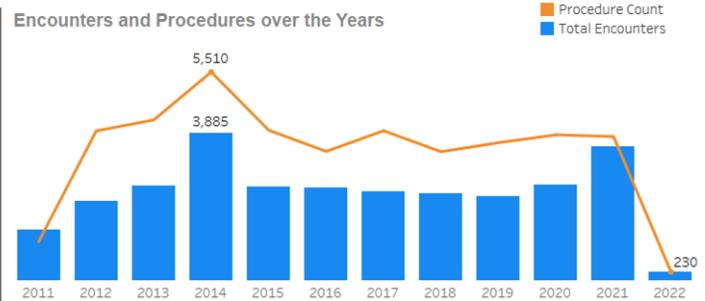
Patients Over the Years



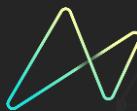
Procedures Covered by Insurance



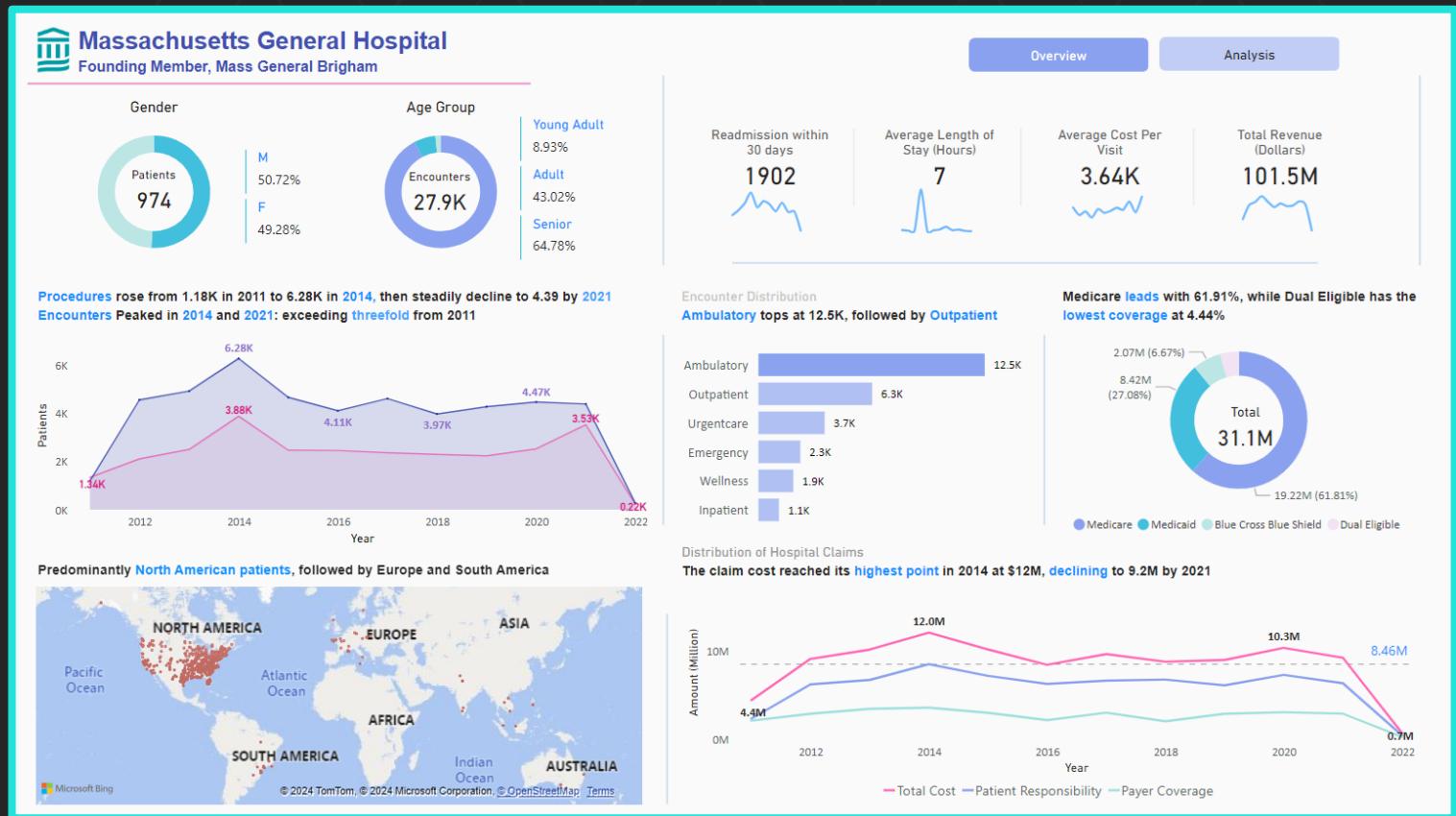
Encounters and Procedures over the Years



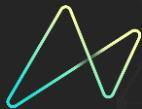
Mukesh Ale



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Sunita Palubanjar



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Massachusetts General Hospital
Founding Member, Mass General Brigham

Overview Brief Encounters Procedures Patients

\$101.5M

Total Encounter Cost

\$105.5M

Total Procedure Cost

\$3,639.7

Avg. Encounter Cost

974

Patient Count

27891

Encounter Count

Total Encounter Cost by Year

Year	Total Encounter Cost (M)
2011	\$4.4M
2012	\$9.1M
2013	\$10.1M
2014	\$12.0M
2015	\$10.1M
2016	\$8.4M
2017	\$9.6M
2018	\$8.8M
2019	\$8.9M
2020	\$10.3M
2021	\$9.2M
2022	\$0.7M

Total Procedure Cost by Year

Year	Total Procedure Cost (M)
2011	\$2.8M
2012	\$9.5M
2013	\$10.8M
2014	\$12.5M
2015	\$10.6M
2016	\$8.8M
2017	\$10.2M
2018	\$9.2M
2019	\$9.6M
2020	\$11.3M
2021	\$9.5M
2022	\$0.7M

Patient Count by AgeGroup

Age Group	Patient Count
90-99	215
80-89	155
70-79	132
40-49	119
60-69	118
50-59	114
30-39	67
100+	54

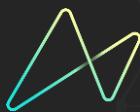
Patient Count by GENDER

Gender	Patient Count	Percentage
M	494	50.72%
F	480	49.28%

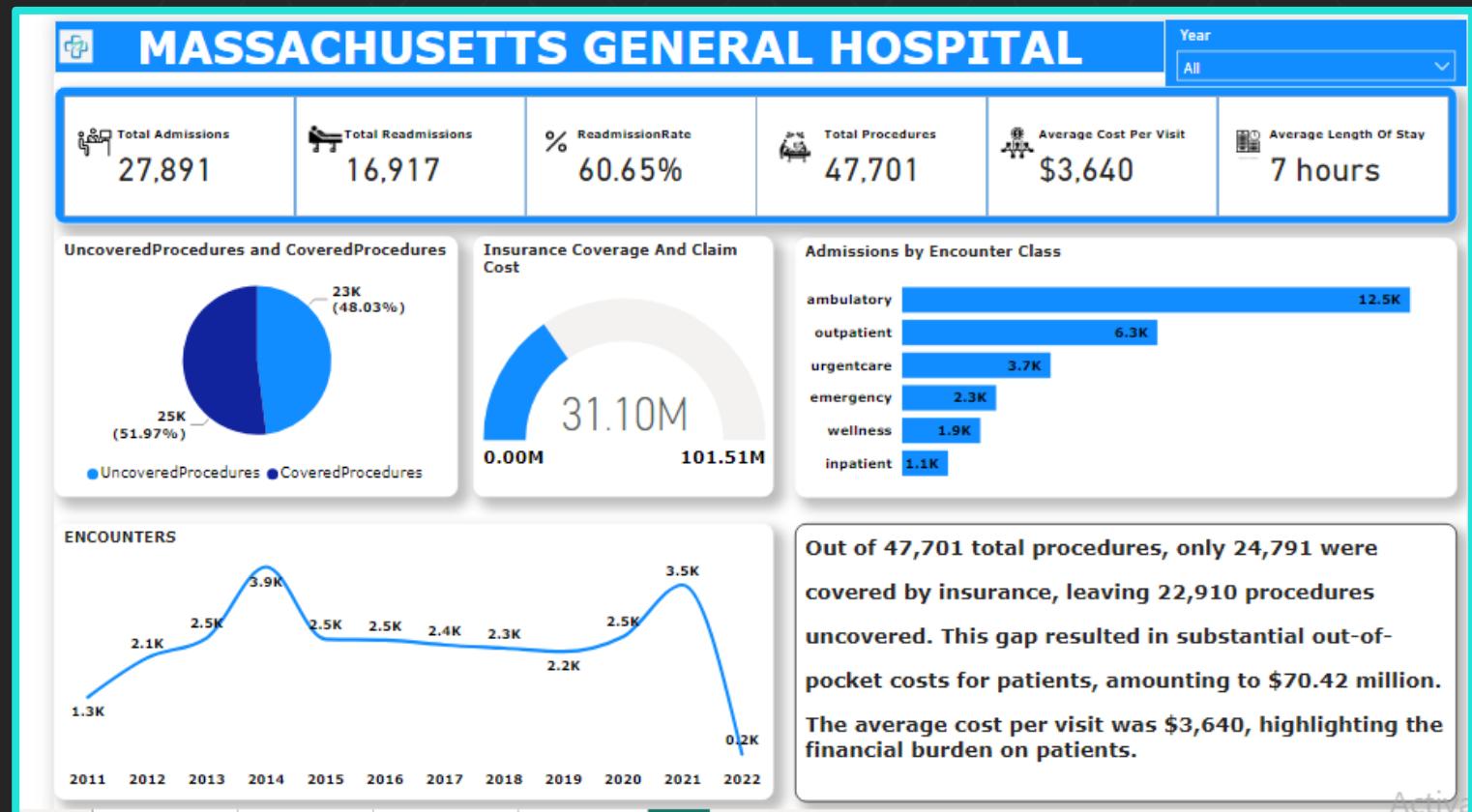
Patient Count by CITY

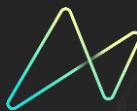
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Keerthana Balasubramanian

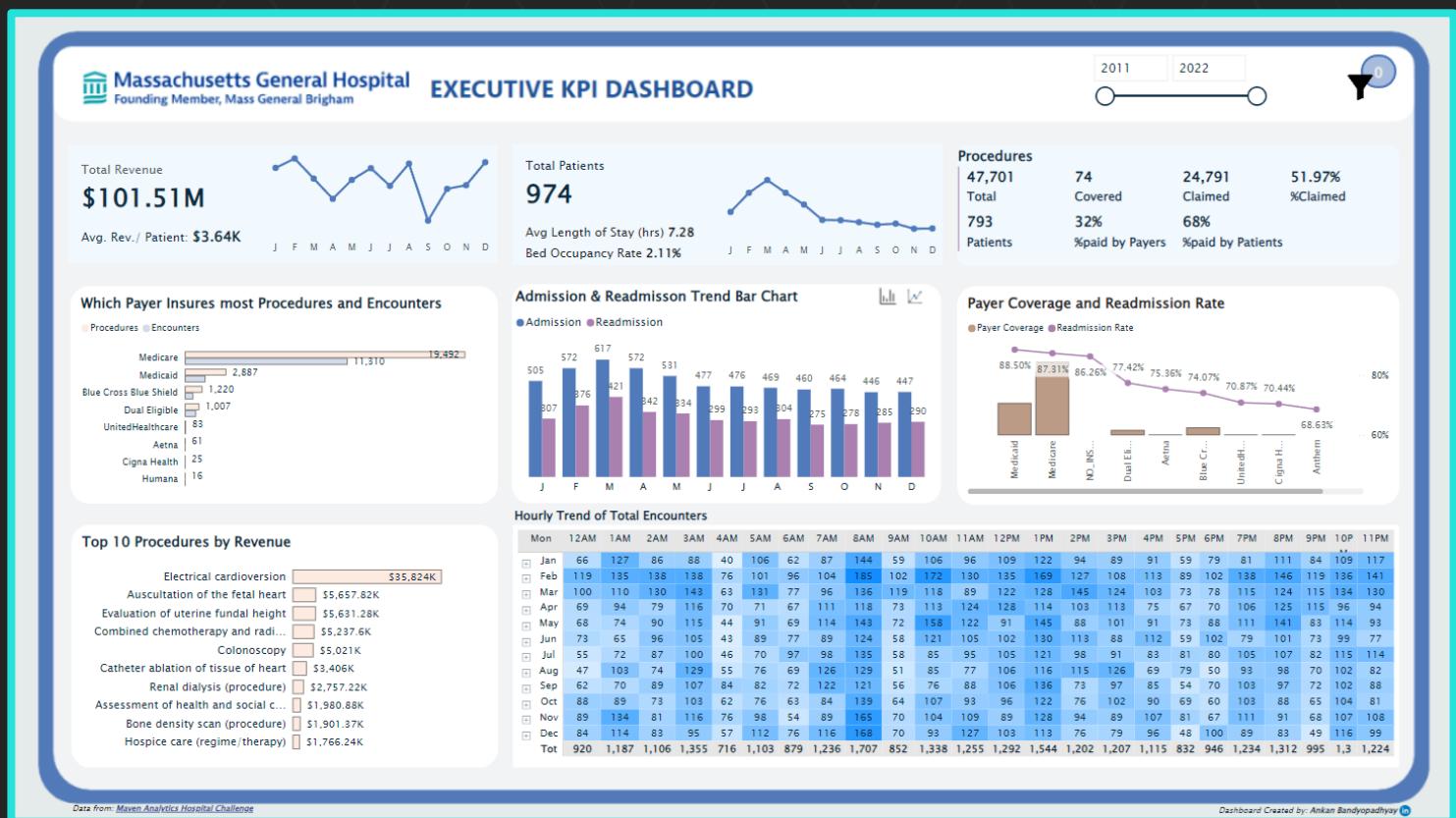


MAVEN HOSPITAL CHALLENGE

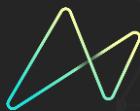




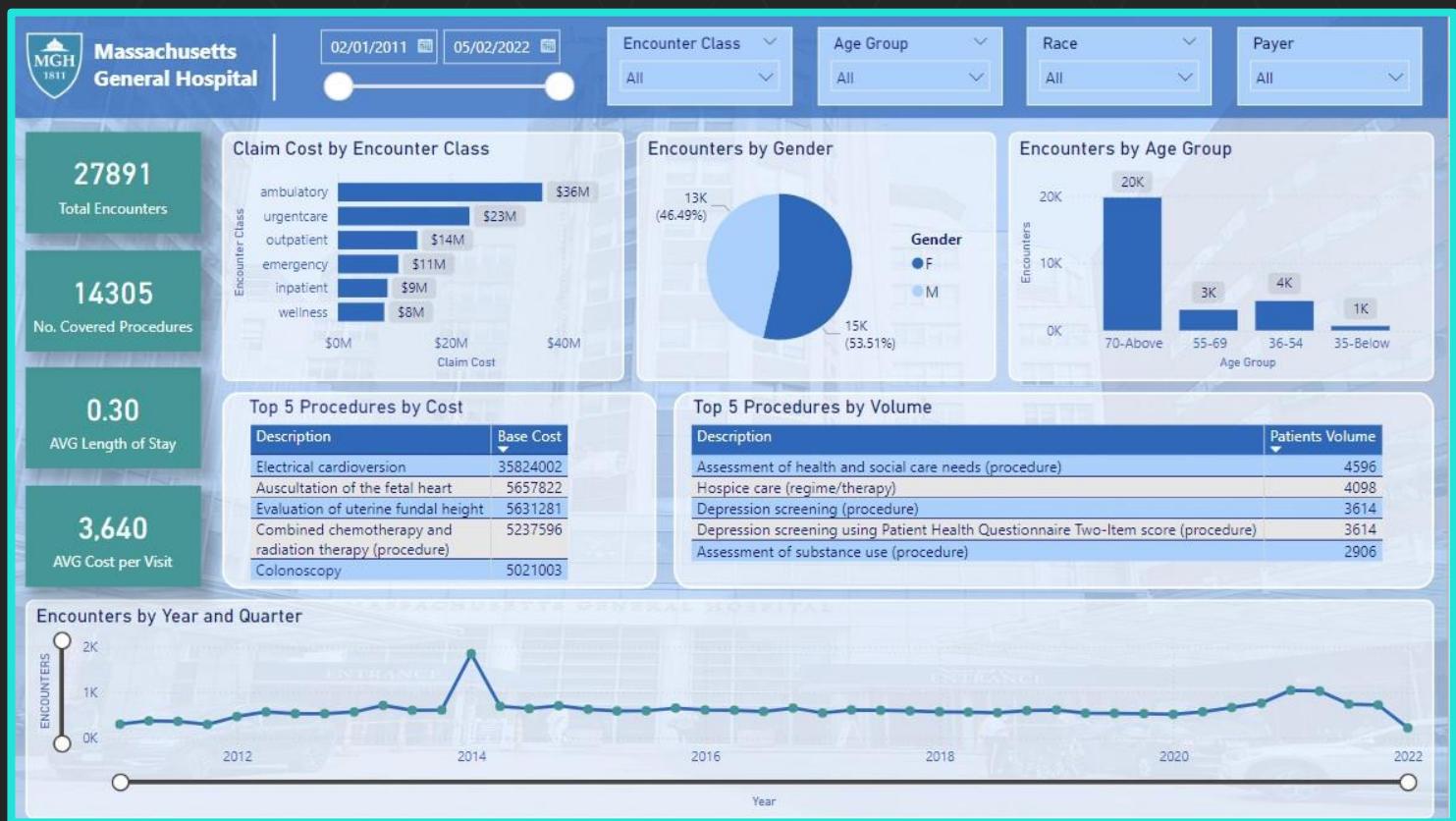
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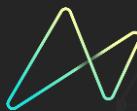
Ankan Banerjee



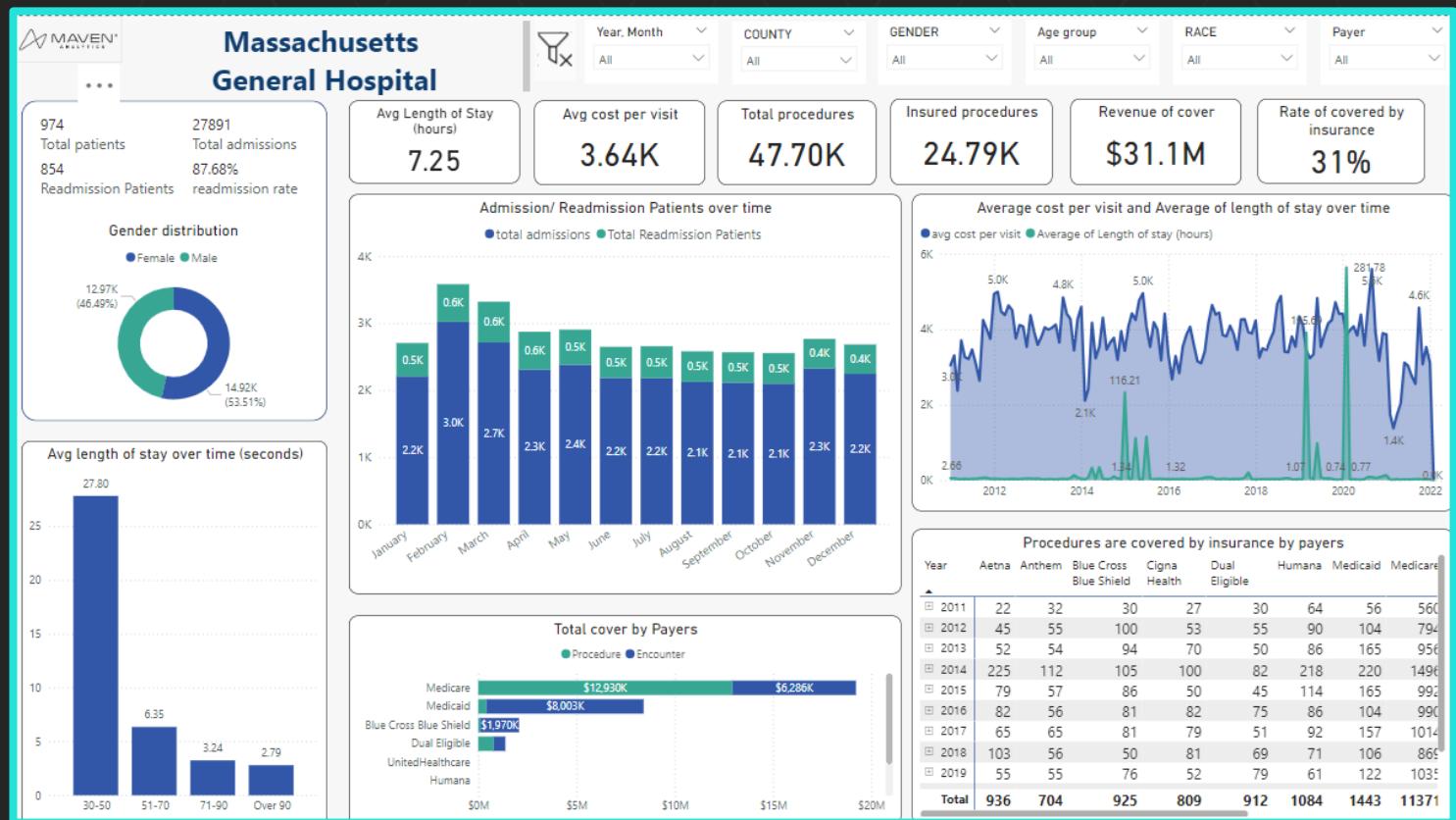
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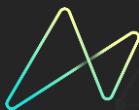
Mohamed Yahaya



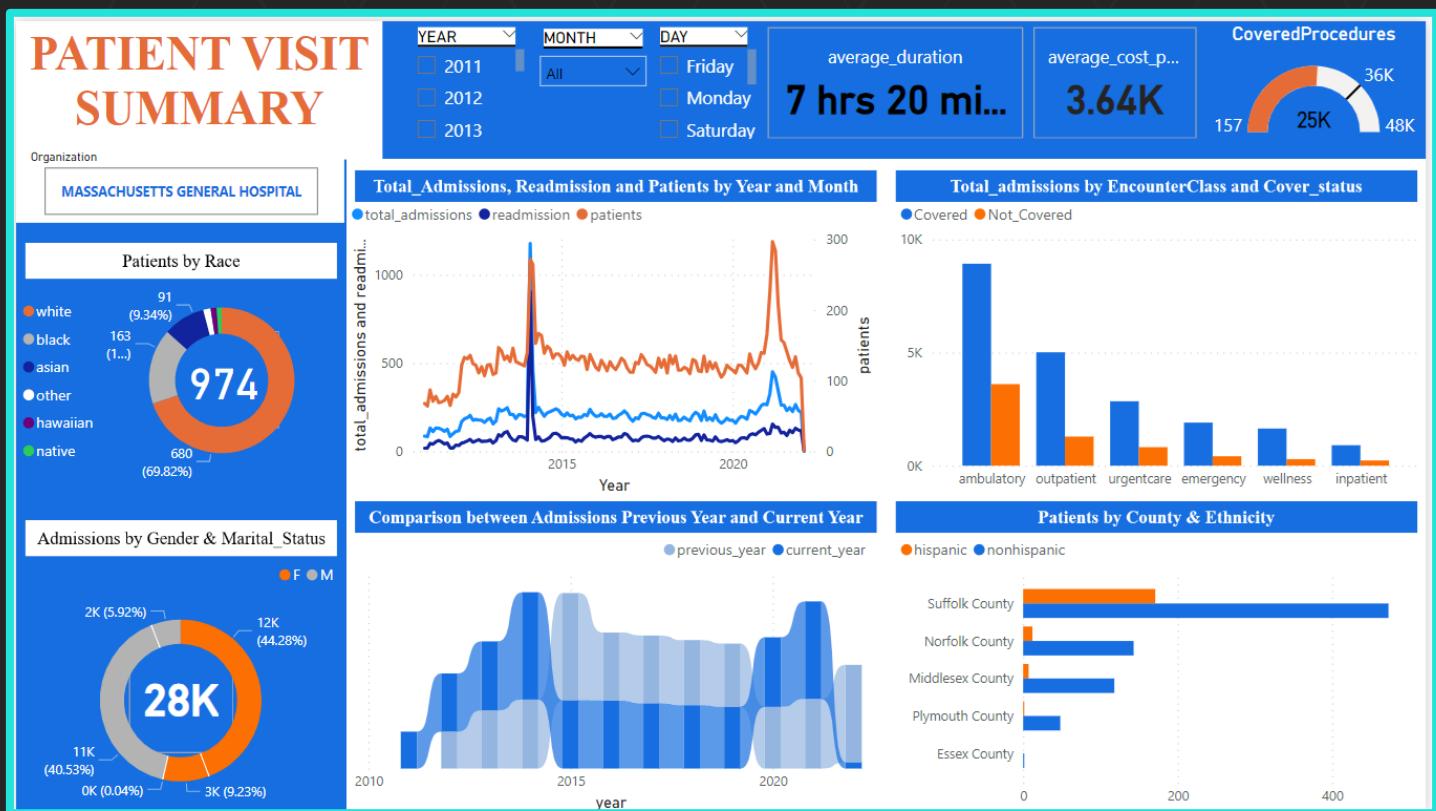
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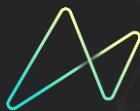
Nguyen N



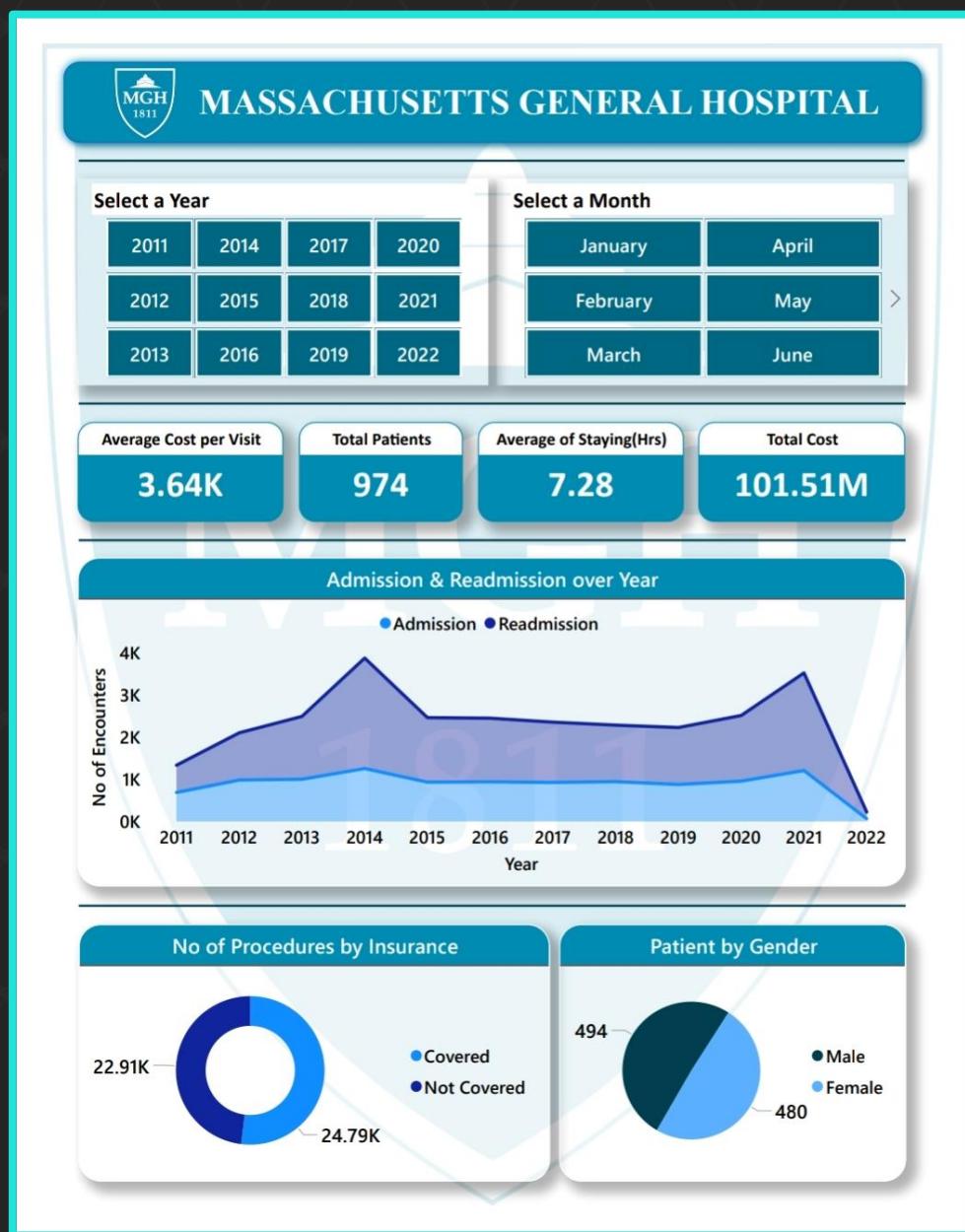
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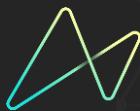
Abigael Chepkoech



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Aashiq Ahamed S H



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MASSACHUSETTS HOSPITAL | PATIENT ANALYSIS

HOME PATIENTS

973 Patients **27.9K** Encounters **3.64K** Average Cost **47.7K** Procedures **6.7** Avg Stay (hrs)

PROCEDURES OVER THE YEARS?

CLASSIFICATION OF PATIENTS BY GENDER?

ENCOUNTERS OVER THE YEARS?

HIGHEST ENCOUNTERS - 2014 (3883)
LOWEST ENCOUNTERS - 2022 (221)

ENCOUNTERS BY ENCOUNTER CLASS ?

ADMISSIONS AND READMISSIONS OVER THE YEARS ?

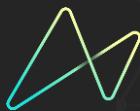
INSURANCE CLASSIFICATION?

INSURANCE NAME	Encounters
Aetna	936
Anthem	704
Blue Cross Blue Shield	925
Cigna Health	809
Dual Eligible	912
Humana	1084
Medicaid	1443
Medicare	11371
NO INSURANCE	8807
UnitedHealthcare	900
Total	27891

AVERAGE COST PER VISIT OVER THE YEARS?

Year	Average Cost
2011	3,300.26
2012	4,301.19
2013	4,048.62
2014	3,093.30
2015	4,103.31
2016	3,418.00
2017	4,065.06
2018	3,815.48
2019	4,002.24
Total	3,639.68

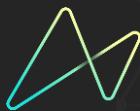
Aashif Jamaan M



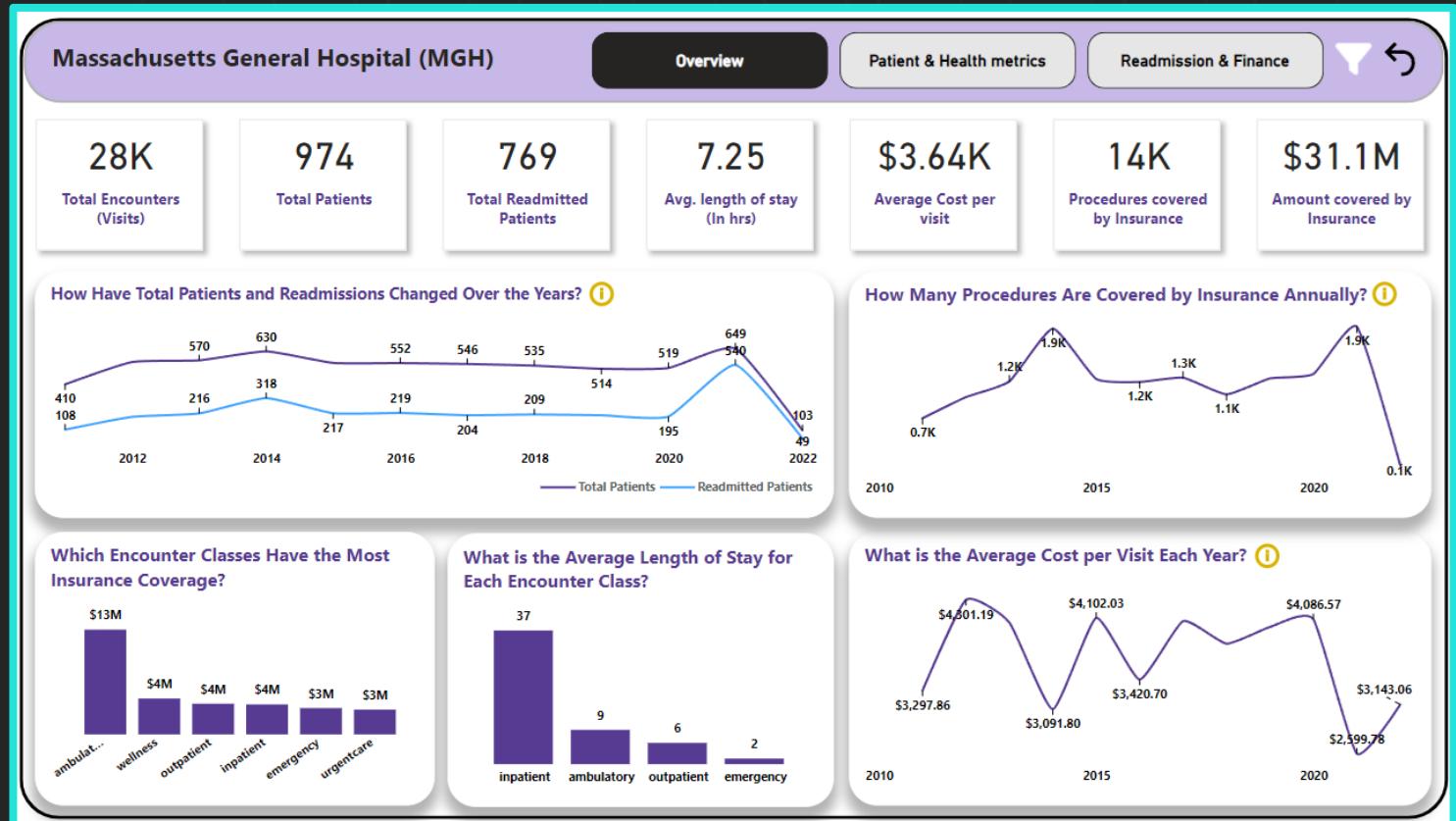
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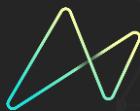
Dilli Prasad Sigirala



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Abhilasha Narasimhan



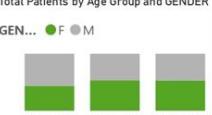
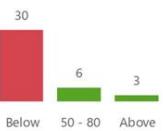
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MASSACHUSETTS GENERAL HOSPITAL Management Dashboard

Viz by : Muhammed ALIMI

Page Navigation : Overview | Encounters | CostPerVisit | StayDuration

Filter by : MONTH: All | YEAR: All

Total Patients 974 Patients Decreased by .0% ▼ Vs Last Month	Total Patients Over Year Avg.: 512	Total Patients by ETHNICITY hispanic 20% nonhispanic 80%	Total Patients by Age Group and GENDER 
Total Encounter 28K Encounter Decreased by .0% ▼ Vs Last Month	Total Encounter by GENDER M 46% F 54%	Total Encounter by TimeCategory Night 47.41% Day 52.59%	Total Procedures Covered By Insurance Not Cover... 31.66% Covered 68.34%
Avg Cost Per Visit \$3.6K AvgC/Visit Decreased by .0% ▼ Vs Last Month Max = 641882.7 Min = 0	Avg. Cost Per Visit Over Year Avg.: \$3,664.8	Avg. CostPerVisit by TimeCategory  Night \$2.9K Day \$4.3K	Avg. CostPerVisit by ETHNICITY nonhispanic \$3.1K hispanic \$6.3K
Avg. Stay Duration (Hrs) 7.25 AvgDuration Decreased by .0% ▼ Vs Last Month Max = 44930Hrs Min = 0Hrs	Avg. Stay Duration (Hrs) Over Year Average: 5.20	Avg. Stay Duration (Hrs) by GENDER  F 6.1 M 8.6	Avg. Stay Duration (Hrs) by Age Group  Below 50 30 50 - 80 6 Above 80 3

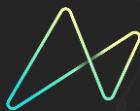
INSIGHTS AND FINDINGS

In the Massachusetts hospital, a total of 974 patients were recorded, with 80% identifying as Hispanic. The yearly average number of patients is 512, with the lowest recorded in 2011 (410) and 2022 (103). Total encounters reached 28,000, with a gender distribution of 46% male and 54% female. Interestingly, 53% of these encounters occurred during the day, and 68% were covered by insurance.

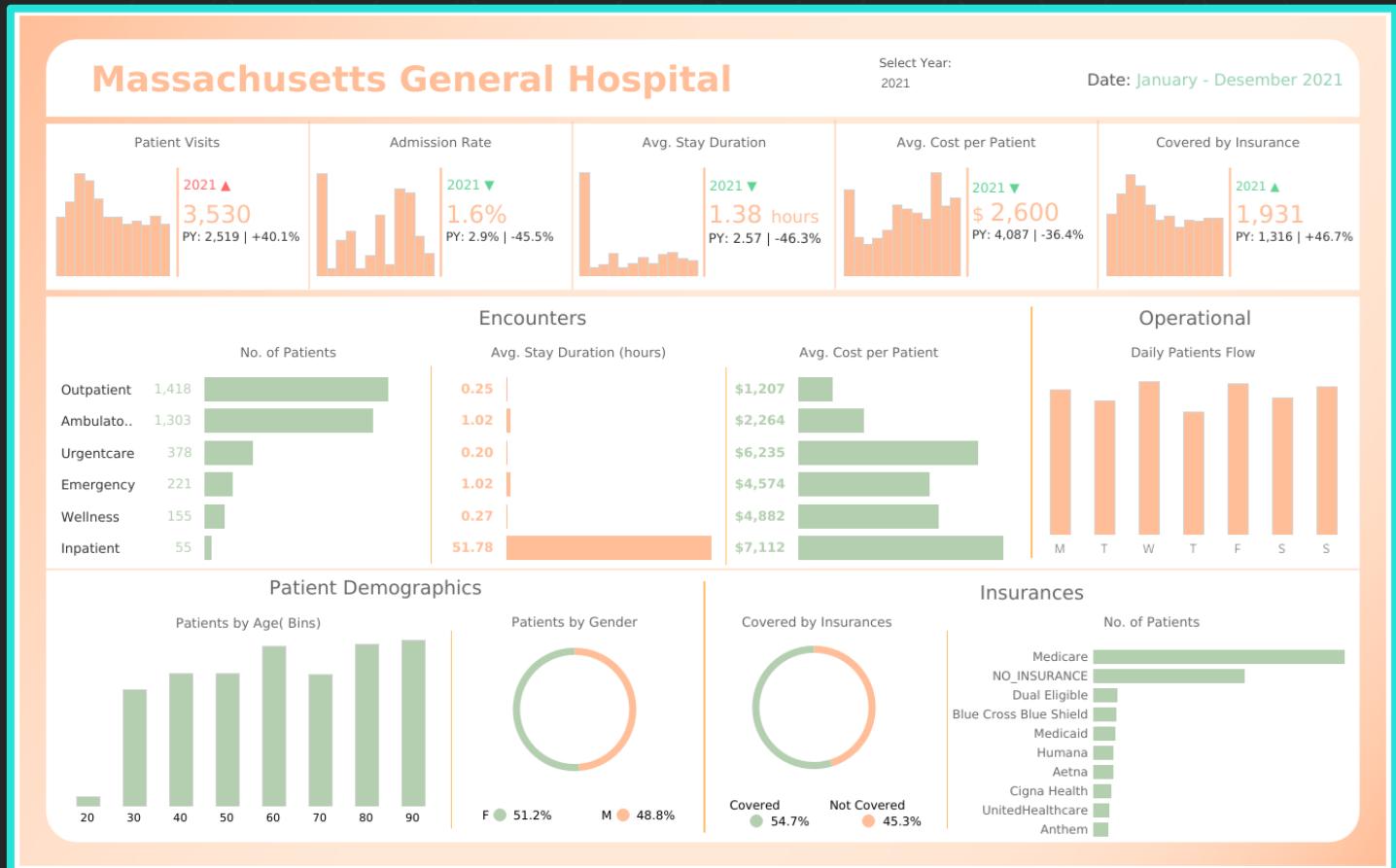
The average cost per patient visit is \$3.6k, peaking at \$642k. Visits during the day averaged \$4.3k, higher than the \$2.9k average at night. Hispanic patients had a higher cost per visit compared to non-Hispanic patients.

The average stay duration is 7.25 hours, with the longest stay at an astonishing 44,930 hours (5 years). The highest yearly average stay duration was in 2014, at 38 hours, compared to the overall yearly average of 5.2 hours. Patients under 50 years old had the highest avg. stay duration at 30 hours, while those over 80 had the shortest at 3 hours.

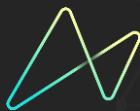
Muhammed Alimi



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Irfan Muhammin



MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital
Founding Member, Mass General Brigham

Overview

Admissions

Stay Duration

Cost Analysis

Insurance Coverage

Made for: Maven Hospital Challenge

Created by: Aditya Singh

Overview

County, City: All | Race: All | Encounter Class: All | Marital Status: All

2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Total Revenue \$101.52M

Average Cost Per Visit \$3.64K

Total Insurance \$31.10M

The High Average Cost per Visit along with Disparities in Cost with regards to Gender and Race Need some Focus for better workflow.

Total Patients 974 | **Readmitted Patients** 854 | **Readmittance Rate** 87.68%

The High Readmittance rate suggest there are lack in the treatment quality and a need for better post-discharge care and follow-up.

Total Procedures 47701 | **Claimed Procedures** 24791 | **Covered Procedures** 73

The Management need to Focus on reducing Higher costs for Uninsured Patients. Notably, There are a significant amount of people (8607 Encounters) with No Insurance.

Average Length of Stay (Hours) 7.28

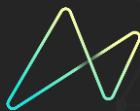
• Long Stays for Severe conditions affects Resource Allocation.
• Whereas Short stays indicate efficiency in emergency cases.

Average Patient Visits 28.64

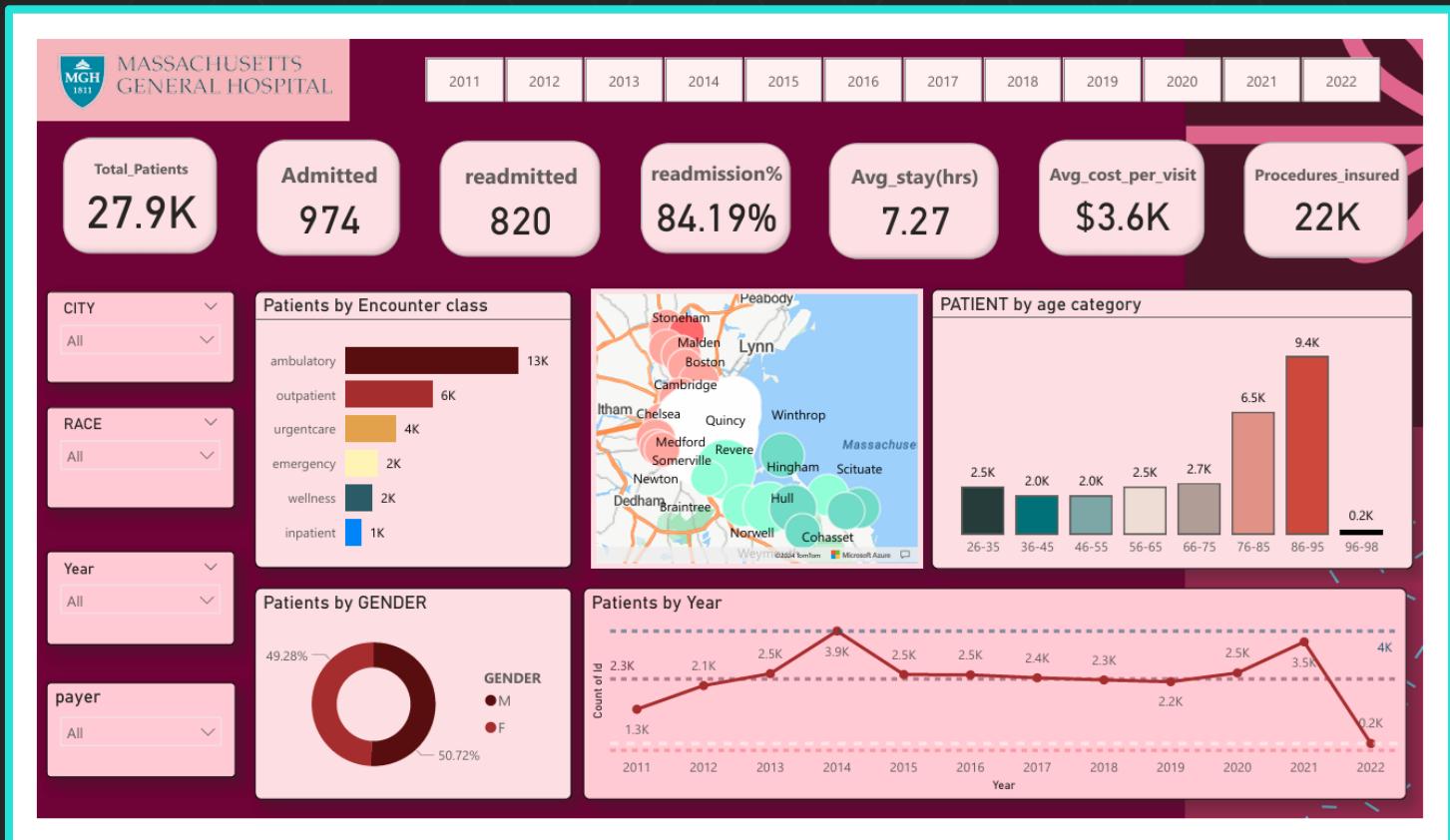
Encounters by Location

City	County	State	Total Encounters
Boston	Suffolk County	Massachusetts	15817
Weymouth	Norfolk County	Massachusetts	2000
Hull	Plymouth County	Massachusetts	1621
Cambridge	Middlesex County	Massachusetts	1281
Quincy	Norfolk County	Massachusetts	1260
Chelsea	Suffolk County	Massachusetts	1220
Everett	Middlesex County	Massachusetts	734
Medford	Middlesex County	Massachusetts	675
Revere	Suffolk County	Massachusetts	579
Somerville	Middlesex County	Massachusetts	527
Total			27891

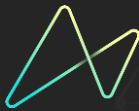
Aditya Singh



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Sankar Doss K



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Massachusetts General Hospital Analysis

Segments

2011	2017
2012	2018
2013	2019
2014	2020
2015	2021
2016	2022

Ethnie Tout

Race Tout

Total rencontre 27 891

Patients Admis 974

Patients réadmis 854

Temps passé 7 h 9 mn

Top 5 maladies readmises

Maladie	Nombre
Depression screening (pr...)	330
Assessment of health a...	327
Assessm...	269
Depression screening usi...	330
Medication Reconciliati...	275

Patient par genre
50.72% des patients sont des hommes
M F

Patient réadmis par genre
50.47% des hommes sont réadmis
M F

Admission vs Readmission par mois
87.68% des patients sont réadmis à l'hôpital
● NBPatient_Admis ● Patients_Readmitted

Mois	NBPatient_Admis	Patients_Readmitted
Jan	501	508
Févr	560	570
Mar	608	619
Avr	564	574
Mai	517	530
Jun	460	477
Jul	474	476
Aoû	456	471
Sep	454	462
Oct	453	460
Nov	436	446
Déc	437	447

Tendance mensuelle des rencontres

Procédures 47 701

Coût moyen par visite \$3 639,68

Coût de procédures 31,10M

Coût total 101,51M

Revenu total par mois
30.63% des revenus proviennent des assurances

Revenu total par classe
Les soins ambulatoires procurent plus de revenu

Revenu d'assurance
La part du revenu d'assurance s'élève à 30.63%

Revenu d'assurance par top 5 maladies
Trente neuf (39) maladies sont couvertes par l'assurance

Maladie	Revenu
Assessment of health and social c...	6,61M
Depression screening (procedure)	5,29M
Assessment of substance ...	3,95M
Medic...	3,40M

Massachusetts General Hospital Analysis

Segments

2011	2017
2012	2018
2013	2019
2014	2020
2015	2021
2016	2022

Ethnie Tout

Race Tout

Procédures 47 701

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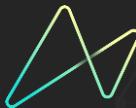
Revenu total par classe
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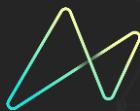
Maladie	Revenu
Assessment of health and social c...	6,61M
Depression screening (procedure)	5,29M
Assessment of substance ...	3,95M
Medic...	3,40M

Souleymane Mahamat Tahir

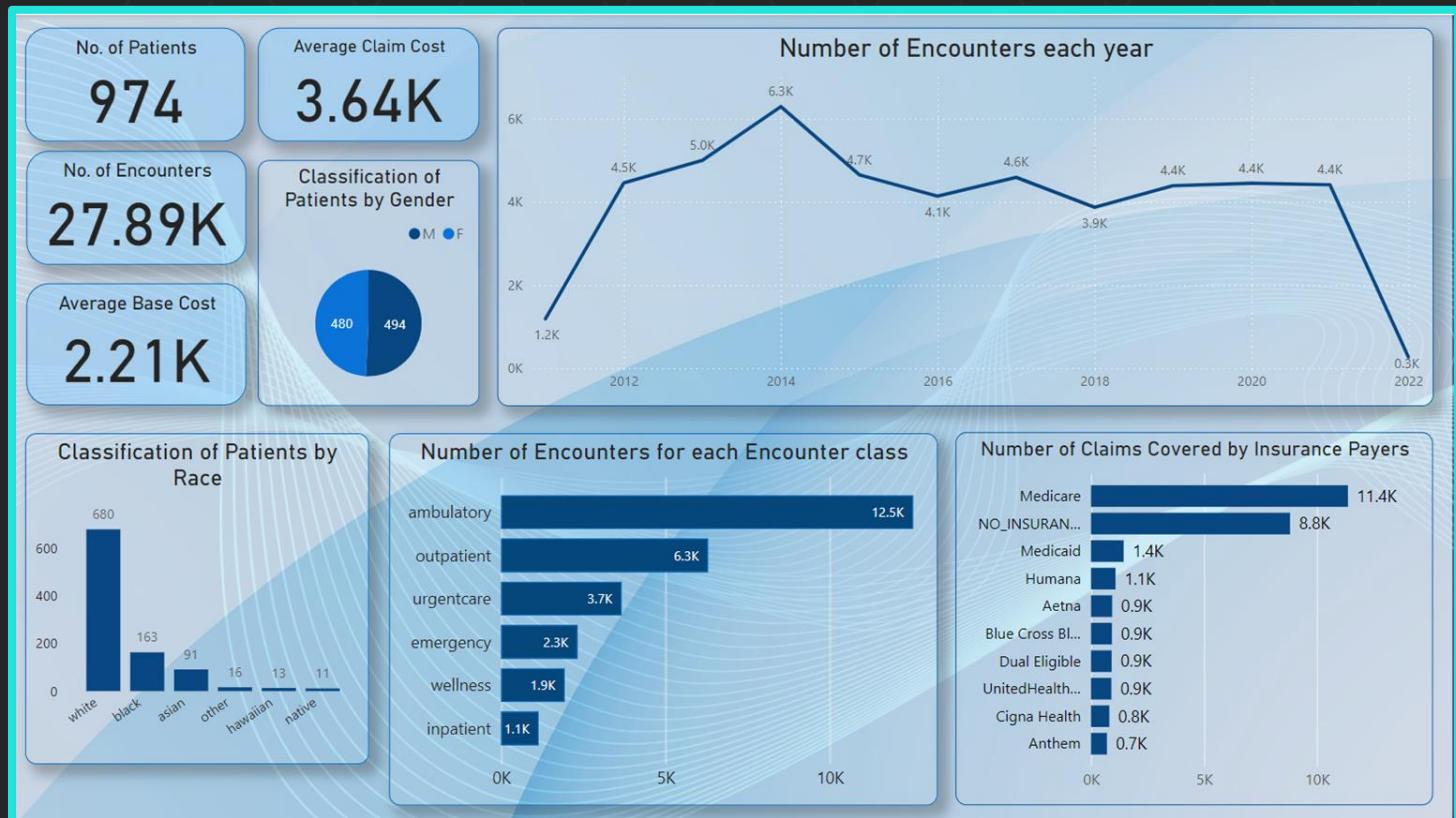


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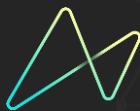




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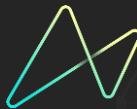
Shreya Verma



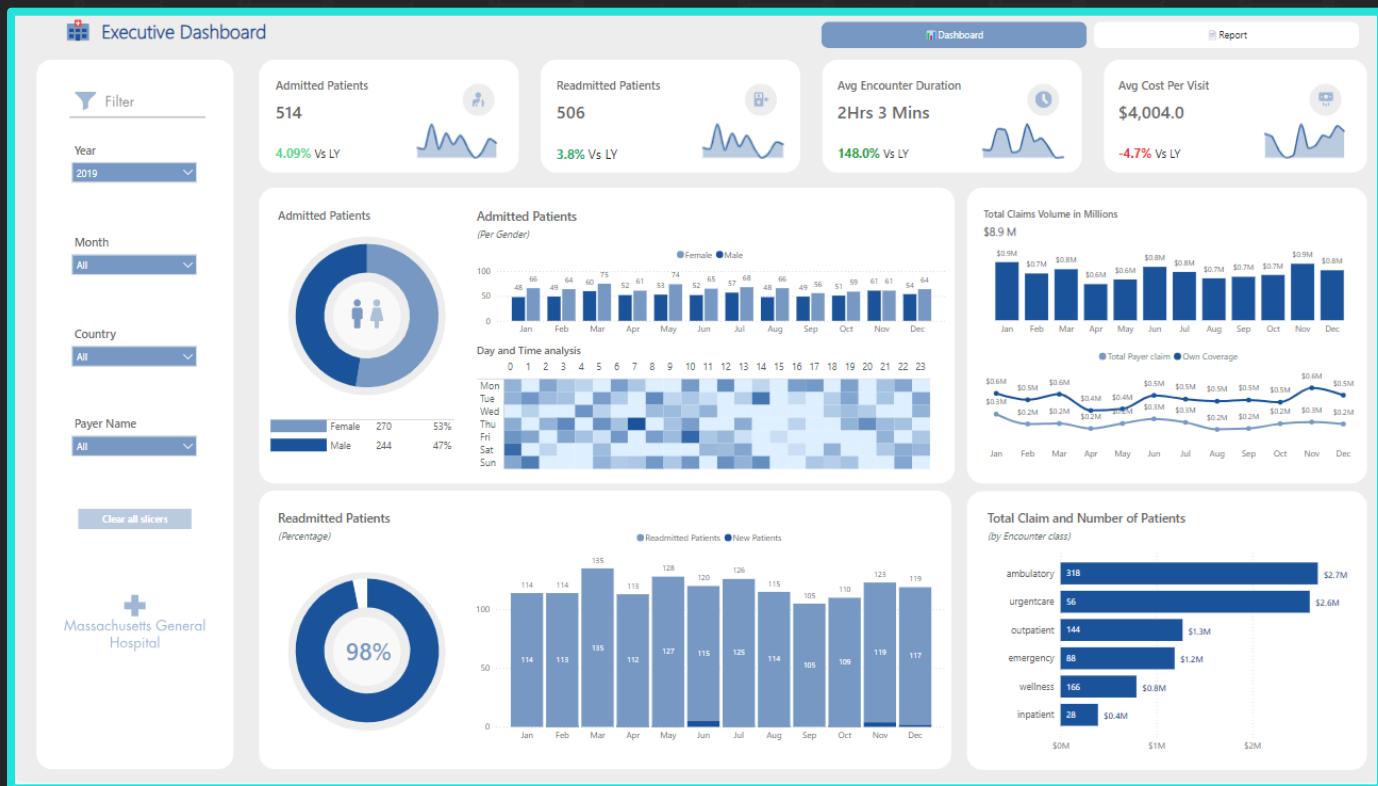
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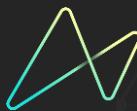
Naguru Feroz



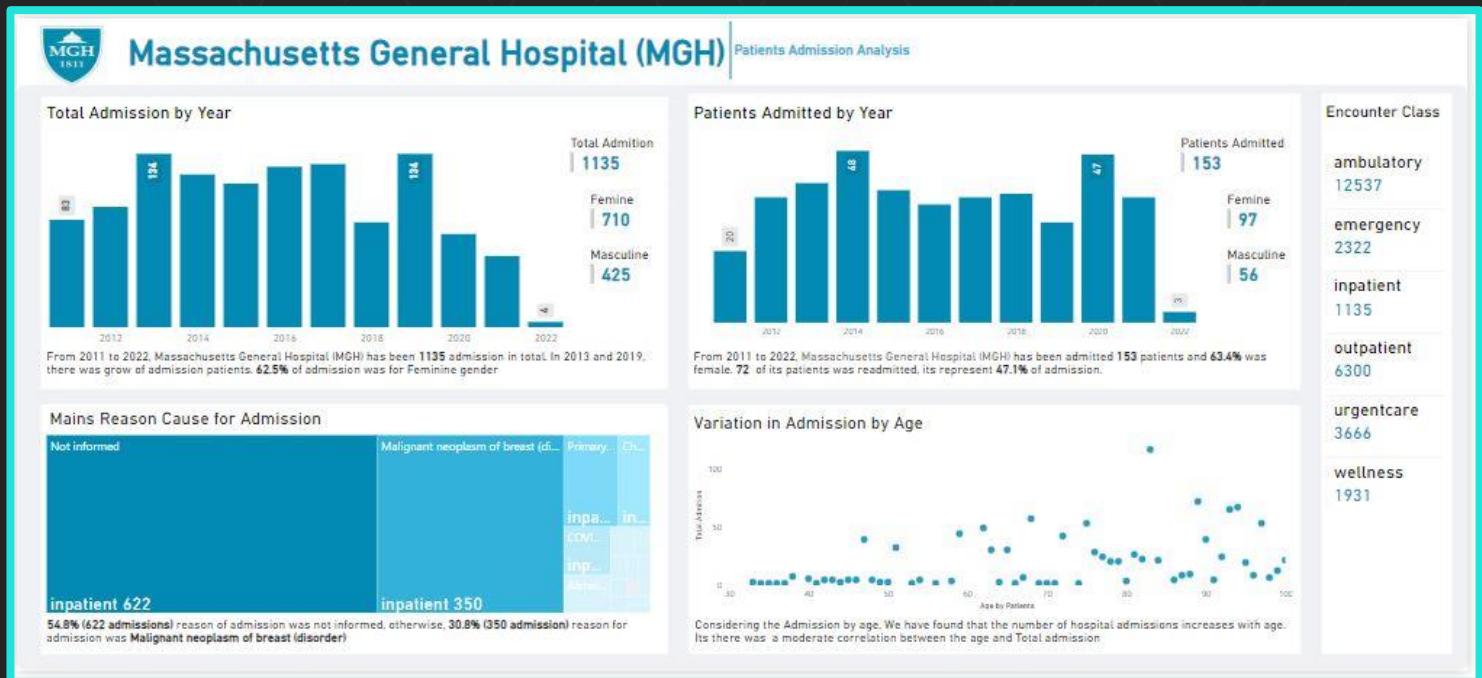
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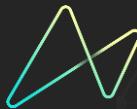
Bob Otieno



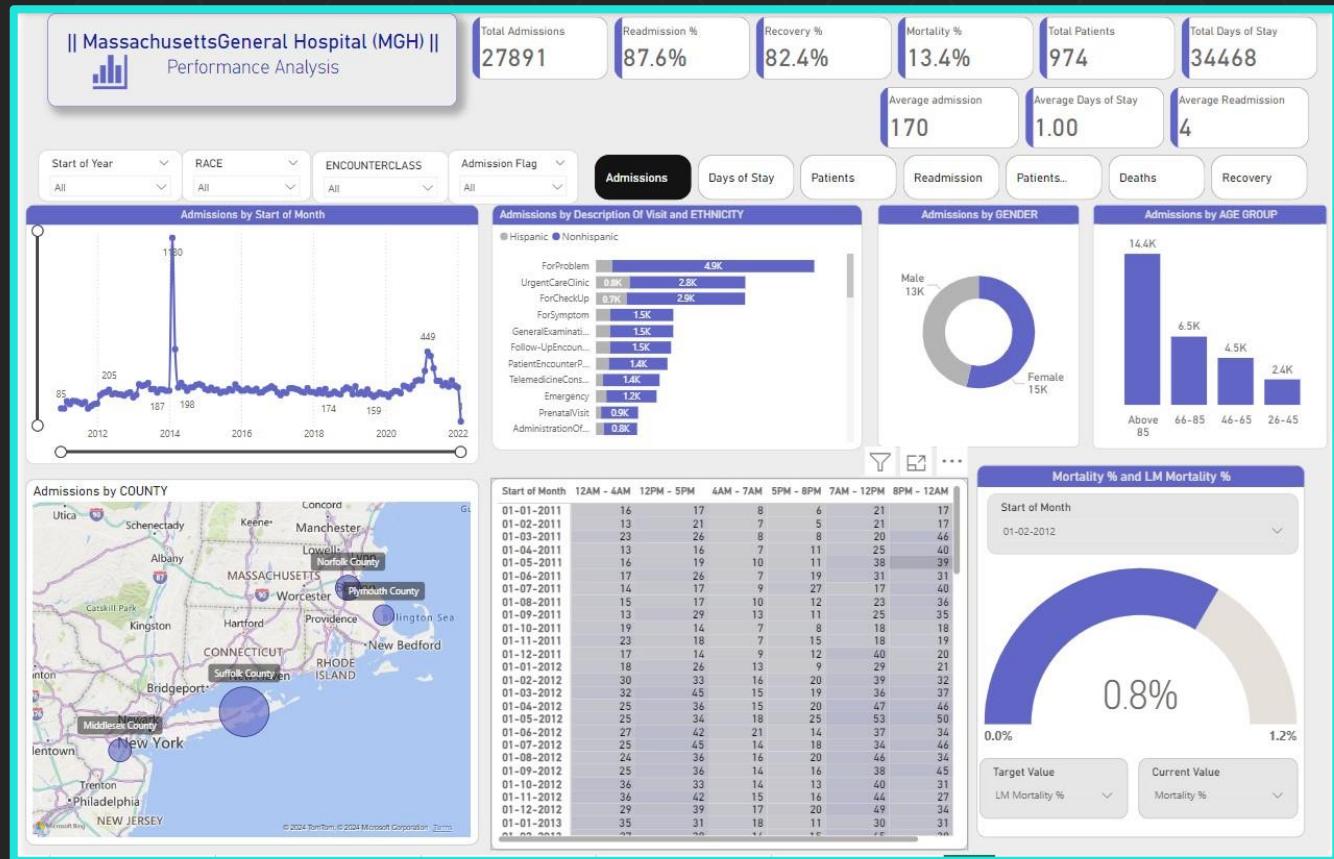
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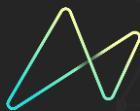
Simao Muhongo Mostech



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Dyuti Mazumder



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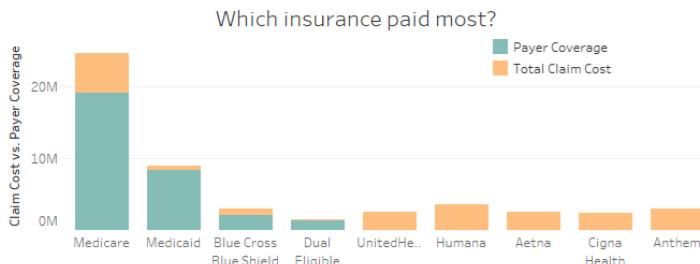
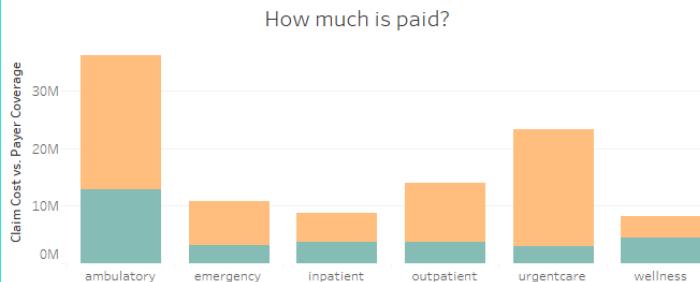
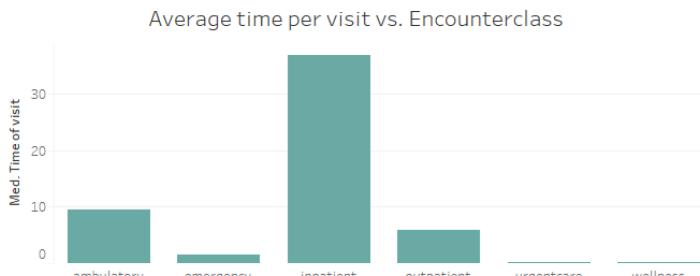
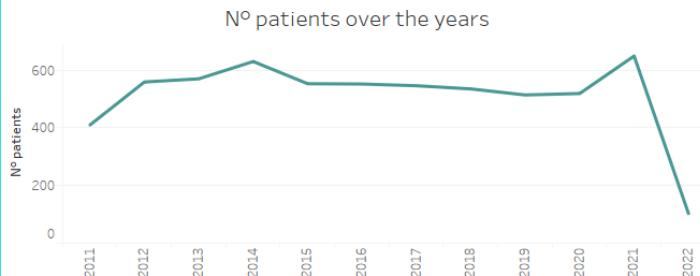
Maven Hospital Challenge

Nº patients:
27.891

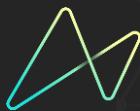
Average time per visit:
7,254 hours

Average cost:
3.640 \$

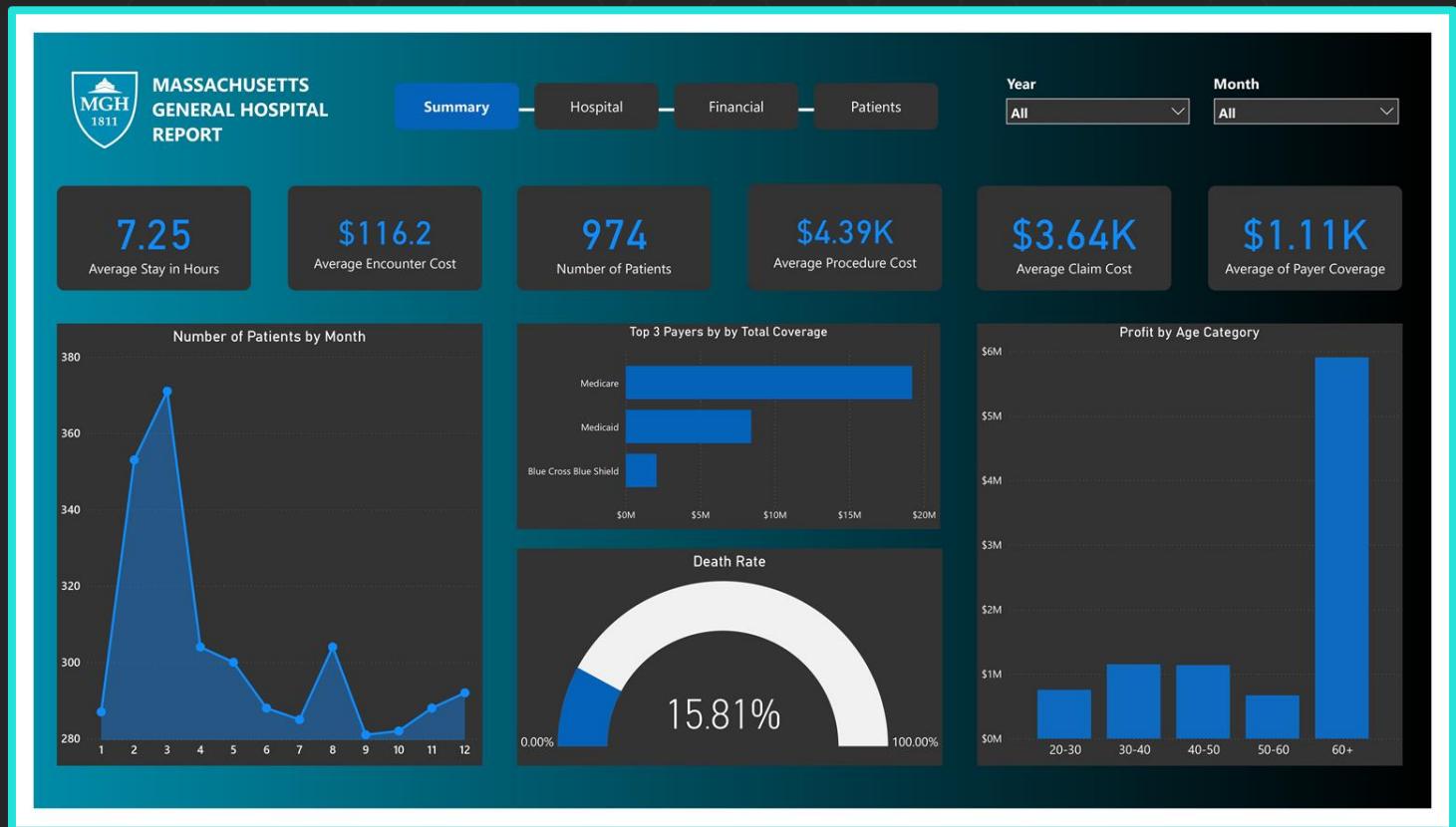
Procedures covered:
27.891



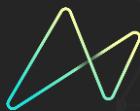
Francesca Sfragara



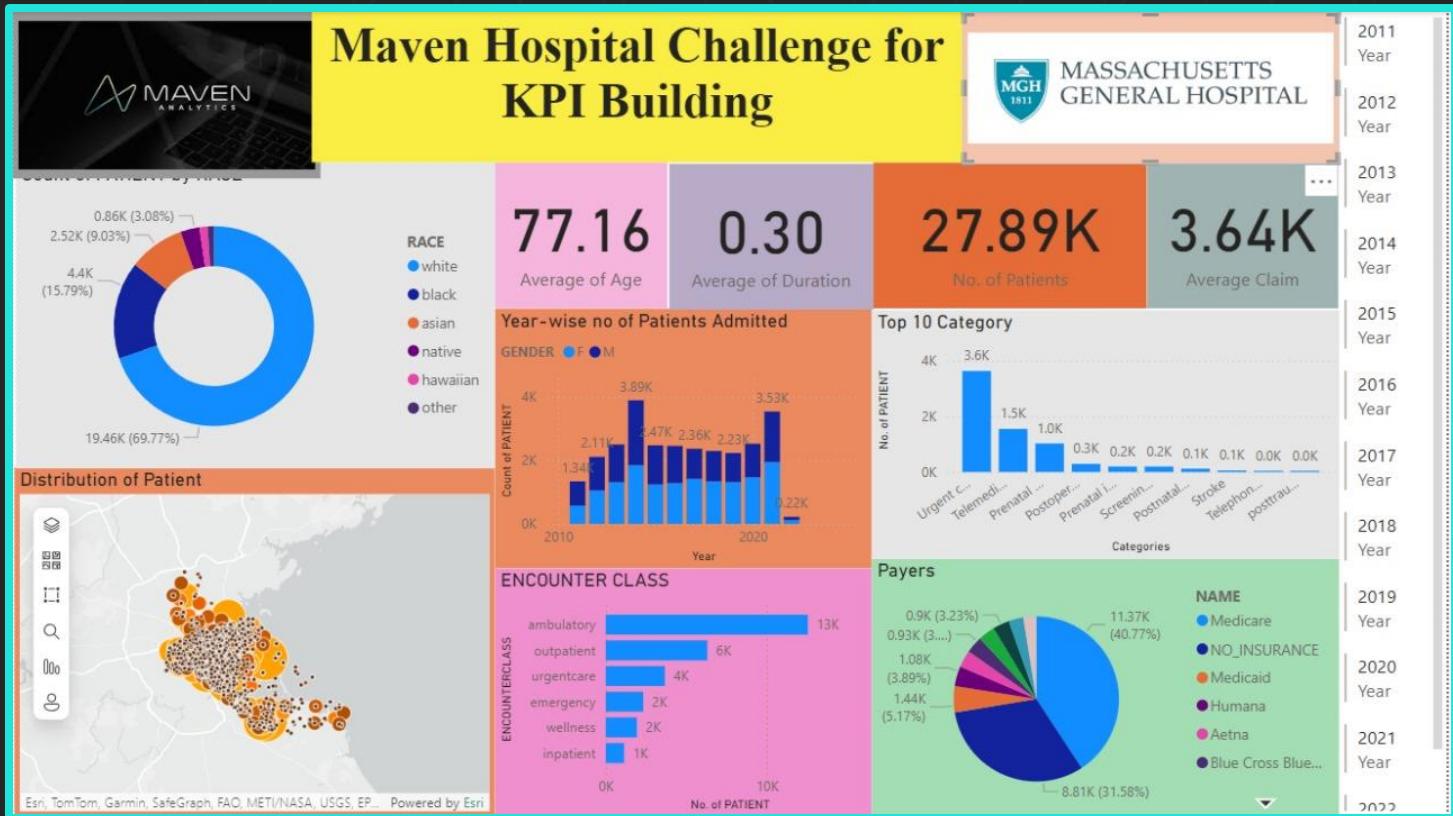
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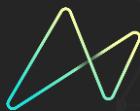
Abdelrahman Gamal



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Ramakanta Meher



MAVEN HOSPITAL CHALLENGE

MASSACHUSETTS GENERAL HOSPITAL

Total encounters **27891**

Total Insured Encounters **19084**

% Insured Encounters **68.42%**

Encounters per Year **2324**

Encounter Trend

Month	Encounters
Jan	2212
Feb	3019
Mar	2703
Apr	2311
May	2379
Jun	2180
Jul	2180
Aug	2127
Sep	2112
Oct	2097
Nov	2325
Dec	2246

Total encounters by Class

Class	Encounters
ambulatory	12537
emergency	2322
inpatient	1135
outpatient	6300
urgentcare	3666
wellness	1931

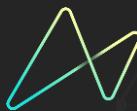
Encounters Vs Procedures Over Years

Year	Encounters	Procedures
2012	2106	1184
2013	4561	1335
2014	4924	3883
2015	4664	6279
2016	2454	4107
2017	2467	3972
2018	2360	2289
2019	2232	4278
2020	2518	4467
2021	3530	4388
2022	221	221

Top Encounters

Encounter Type	Total encounters
Administration of vaccine to produce active immunity (procedure)	1003
Admission to hospice (procedure)	21
Admission to intensive care unit (procedure)	38
Admission to surgical department	13
Allergic disorder follow-up assessment	1
Allergic disorder initial assessment	1
Asthma follow-up	98
Cardiac Arrest	4
Consultation for treatment	469
Death Certification	51
Discussion about treatment (procedure)	9
Total	27891

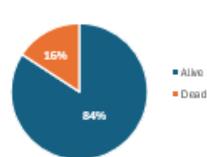
Raj Dada



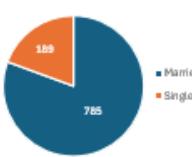
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MASSACHUSETTS GENERAL HOSPITAL

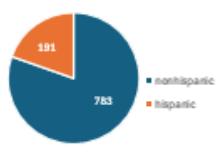
Mortality



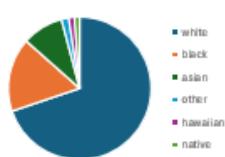
Marital



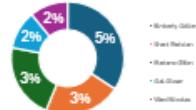
Ethnicity



Race



Readmission % Top 5 Patients



Total Admissions:

27891

Average Stay
(Days/Hours):

7.27

Average Cost Per Visit:

£3,639.68

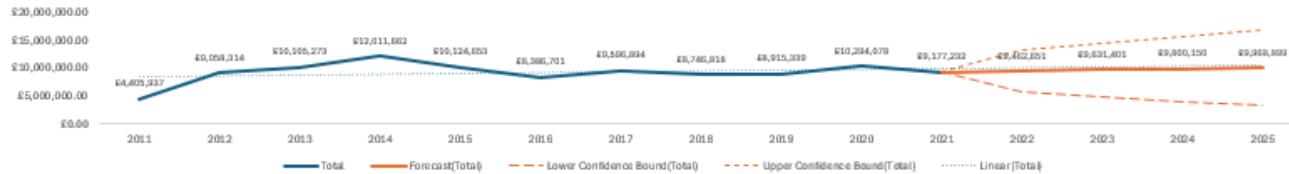
Procedures Covered By

14303

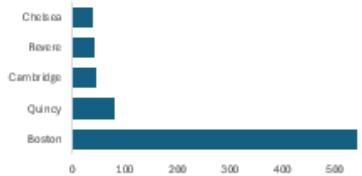
Readmission Avg %:

0.10%

Total Cost Per Year + 4yr forecast



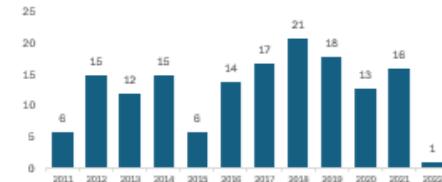
Patients by City Top 5



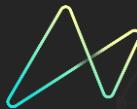
Deaths by City Top



Deaths By Year

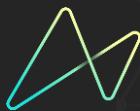


Ameet Dhokia



MAVEN HOSPITAL CHALLENGE





MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital Founding Member, Mass General Brigham

View by: Year Quarter Month (i)

KPI values: 2021, Trendlines: 2012 - 2021

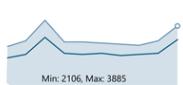
Encounters

Total encounters

3530

▲ 40% (2020: 2519)

Reference: 73% (2577 encounters) took place with patients having a health insurance.



Encounters with admitted patients

Encounters classified as "Inpatient"

55

▼ -24% (2020: 72)

Average stay: 2.2 day(s)

80% leaves within 25 hours(s)



Encounters with no intended overnight stay

3475

▲ 42% (2020: 2447)

Average stay: 6.6 hour(s)

80% leaves within 1.8 hours(s)



Costs

Claimed costs

\$9.18M

▼ -11% (2020: \$10.29M)

Reference: covered by insurance: \$2.87M (31%)



Calculated costs

Calculated cost: the sum of the encounter base cost plus base costs of all related procedures

\$9.94M

▼ -14% (2020: \$11.56M)

Reference: claimed cost. Not claimed: \$0.76M



Average cost encounter based on calculated costs

\$2,816

▼ -39% (2020: \$4589)

Reference: average cost per encounter based on claimed cost: \$2600



Procedures & Patients

Performed procedures

Procedure covered: payer coverage exceeds the base costs of the procedure(s)

4,387

▼ -2% (2020: 4468)

Procedures claimed: 2472 (56%)

Reference: procedures covered 1464 (33%)



Different patients

649

▲ 22% (2020: 519)

Reference: returning patients, encounters with a new patient: 26



Average age patient during encounter

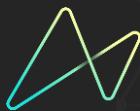
75

Reference: 20% of the hospital encounters involve patients of 92 years or older

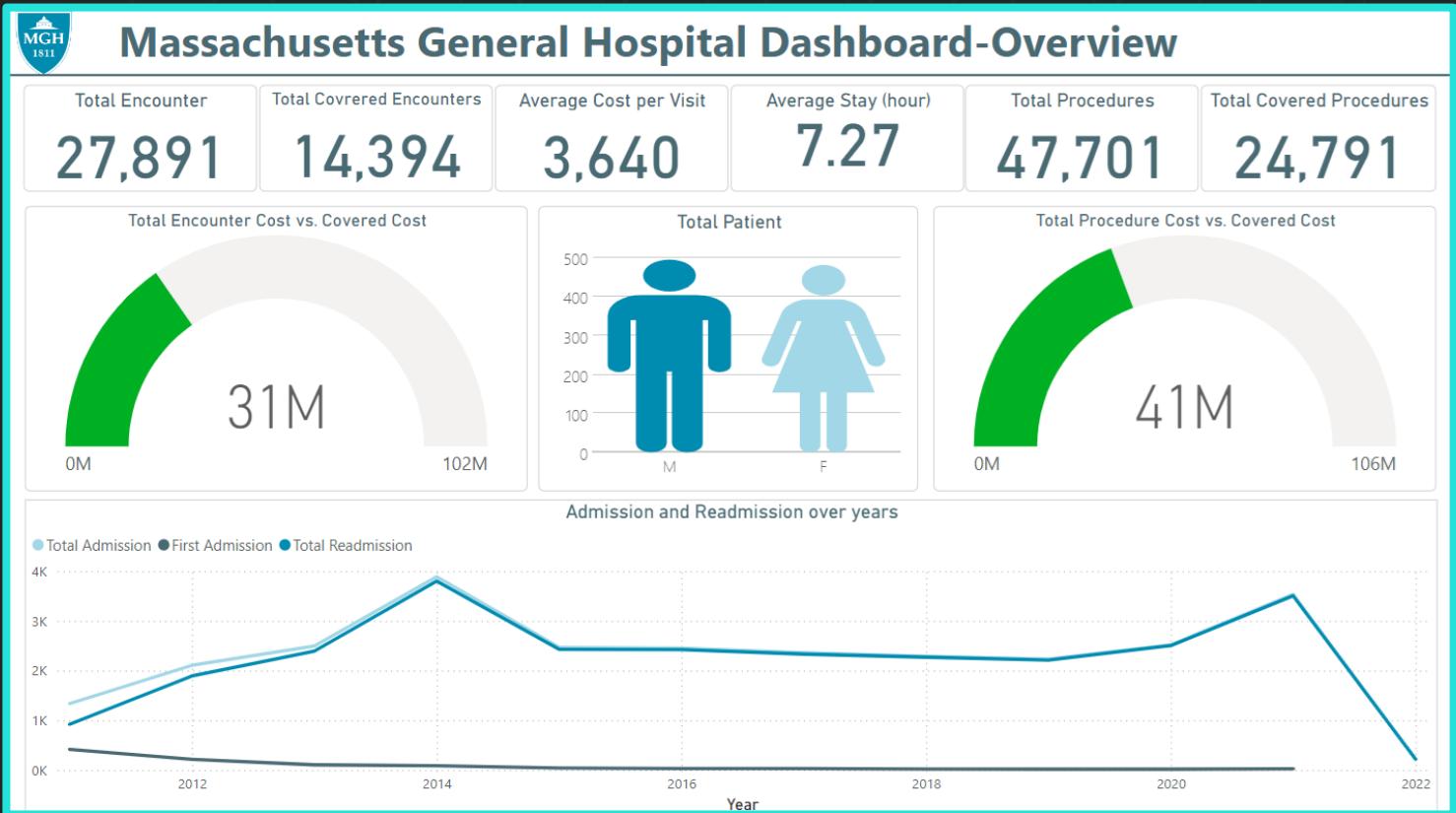


Data source: subset of 974 patients of whom 154 have died according to patient records.

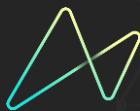
Marie-Anne Melis



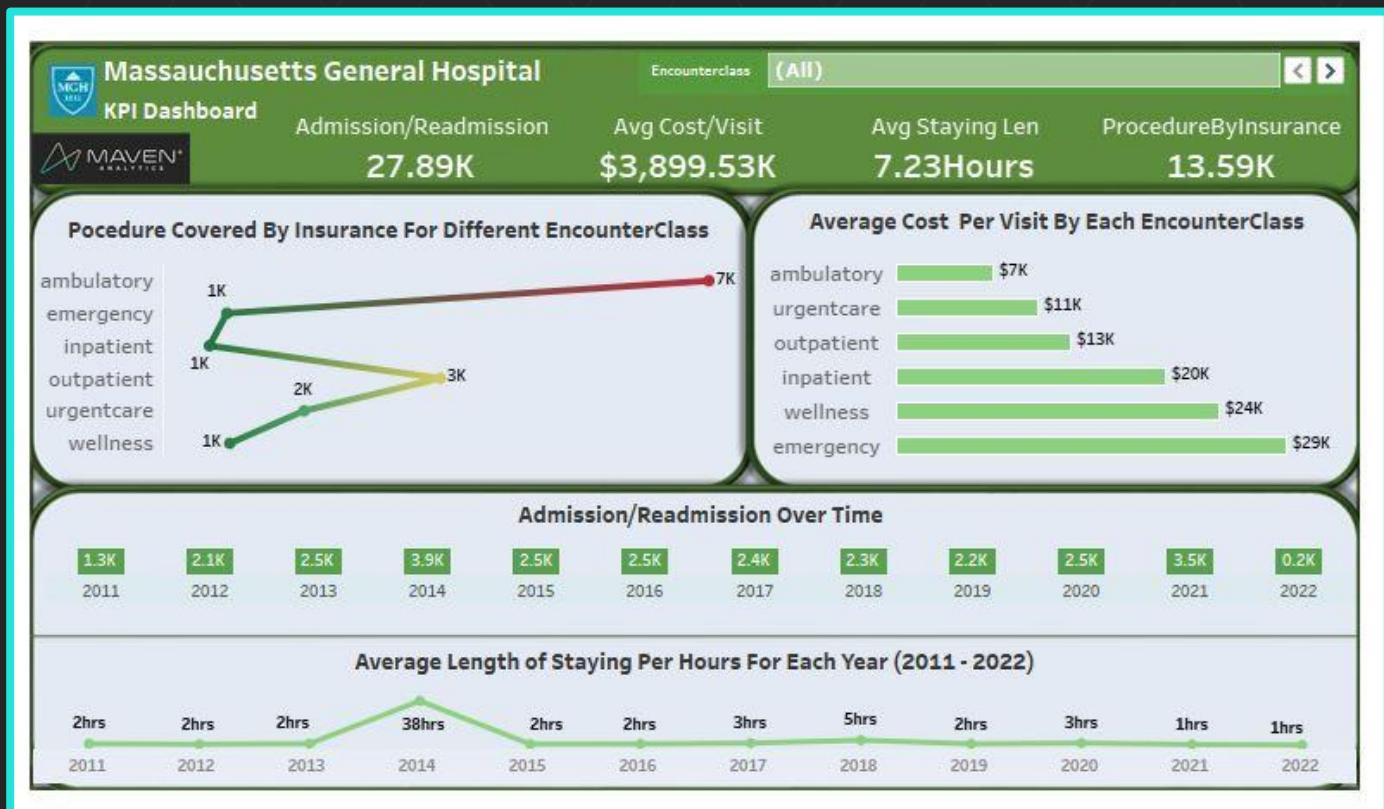
MAVEN HOSPITAL CHALLENGE

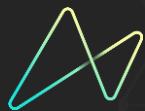


Maryam Gharakhanlu

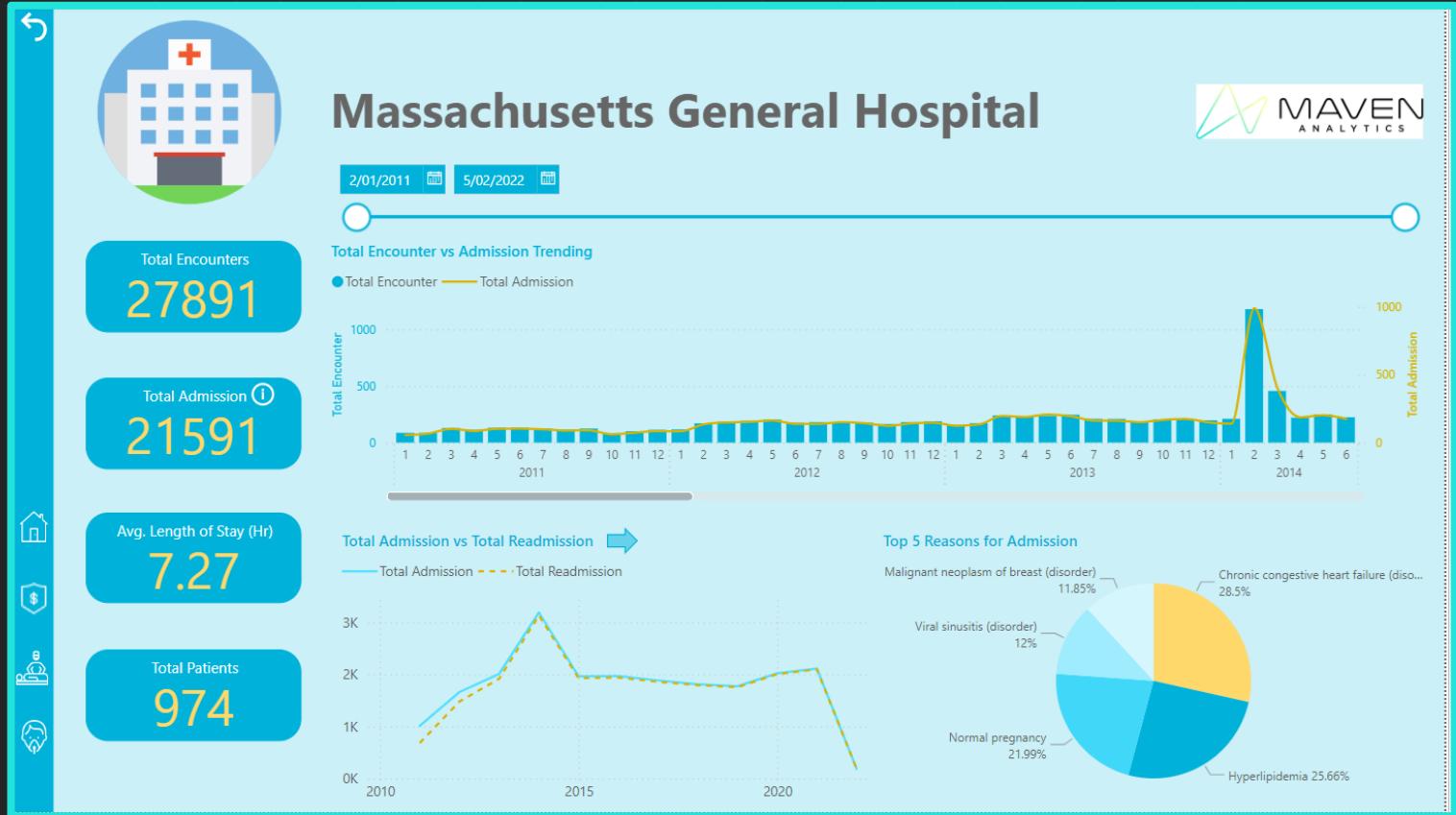


MAVEN HOSPITAL CHALLENGE

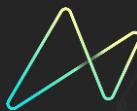




MAVEN HOSPITAL CHALLENGE



Lin Zhu



MAVEN HOSPITAL CHALLENGE

M
**MASSACHUSETTS
GENERAL HOSPITAL**

KPI DASHBOARD

Year

▼

Massachusetts General Hospital (MGH), recognized as top hospital in the nation by U.S News & World Report for 2023–2024. MGH offers sophisticated diagnostic and therapeutic care in virtually every specialty of medicine and surgery.

From 2011 until 2022, here is a quick look at MGH with numbers.

Admitted Re Admitted Outpatient

● Admitted ● Re Admitted ● Outpatient

Month	Admitted	Re Admitted	Outpatient
Jan	4,596	3,614	2,906
Feb	4,596	3,614	2,906
Mar	4,596	3,614	2,906
Apr	4,596	3,614	2,906
May	4,596	3,614	2,906
Jun	4,596	3,614	2,906
Jul	4,596	3,614	2,906
Aug	4,596	3,614	2,906
Sep	4,596	3,614	2,906
Oct	4,596	3,614	2,906
Nov	4,596	3,614	2,906
Dec	4,596	3,614	2,906

Unique Patients
974
from **29** different city in Massachusetts

Total encounters
27,891
cases handles per year,
194 patients per month

Total Base Cost
\$3.24M
with **\$101,514,379.82** Claim Cost,
\$82,255,085.36 covered by insurance

Number of Procedures

● Covered ● Not Covered by Insurance

Covered (%)	Not Covered (%)
130 (45.3%)	157 (54.7%)

Patient with Longest stay in MGH

First Name	Last Name	xAdmitted	Days Stay
Florencio	Breitenberg	71	1,872
Nick	Tillman	9	1,812
Ana Luisa	Salinas	41	456
Lynda	Lang	11	446
Sharolyn	Halvorson	91	396
Carla	Urrutia	21	348

7.25 Hours (AVERAGE) 15 Minutes (MINIMUM) 1,872 Days (MAXIMUM)

Procedure Description

Procedure Description	Encounter	Admitted	Outpatient
Assessment of health and social care needs (procedure)	4,596	2,192	2,404
Depression screening (procedure)	3,614	1,806	1,808
Depression screening using Patient Health Questionnaire	3,614	1,806	1,808
Two-item score (procedure)	2,906	1,472	1,434
Assessment of substance use (procedure)	2,746	2,746	
Renal dialysis (procedure)	2,422	1,082	1,340
Assessment using Morse Fall Scale (procedure)	2,288	1,155	1,133
Assessment of anxiety (procedure)	2,284	1,218	1,066
Medication Reconciliation (procedure)	1,484	762	722
Screening for drug abuse (procedure)	1,432	698	734

Total Claim by Encounter class

Ambulatory	Outpatient	Emerg...
\$36.28M	\$14.09M	\$10.75M

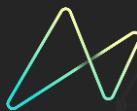
Urgentcare

Inpatient	Wellness
\$8.81M	\$8.23M
\$23.35M	

NAME	CITY	Cases	Claimed Cost
Aetna	Hartford	936	\$2,589,956.10
Anthem	Indianapolis	704	\$2,982,715.05
Blue Cross Blue Shield	Chicago	925	\$3,002,166.01
Cigna Health	Bloomfield	809	\$2,424,532.96
Dual Eligible	Baltimore	13,726	\$35,148,285.90
Humana	Louisville	1,084	\$3,543,921.36
Medicaid	Baltimore	13,726	\$35,148,285.90
Medicare	Baltimore	13,726	\$35,148,285.90
UnitedHealthcare	Minnetonka	900	\$2,563,507.98
Total		19,084	\$52,255,085.36
9 Insurer	2,120 Avg Cases	\$5,806,120.60 Avg Claim	

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Mohd Azhar Ahmad



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 Massachusetts General Hospital
Founding Member, Mass General Brigham

HEALTHCARE PERFORMANCE DASHBOARD

Encounters

27.891

Total Encounters

68%

% Insured Encounters

974

Total Patients

88%

% Readmitted Patients

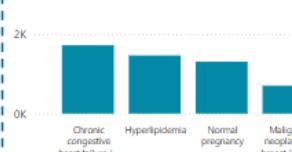
Most encounters are readmissions, indicating deficient follow-up care

Encounters Trend by Year



Top Known Conditions for Readmissions

Chronic congestive heart failure (...), Hyperlipidemia, Normal pregnancy, Malignant neoplasm of breast (disorder), Viral sinusitis (disorder), Others

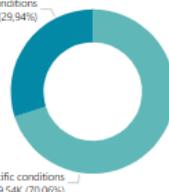


High % of "no specific conditions" encounters, suggests inaccurate diagnoses

Encounters Type

specific conditions 8,35K (29,94%)

no specific conditions 19,54K (70,06%)



Procedures

47.701

Total Procedures

3

Failed Procedures

High % of covered procedures, but no signs of growth over the years

Procedures Trend by Year



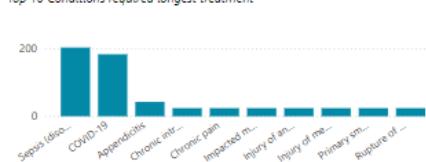
Length

7,27

Avg Length (hours)

Sepsis and COVID-19 require extended hospital care than others

Top 10 Conditions required longest treatment



Cost

\$102M

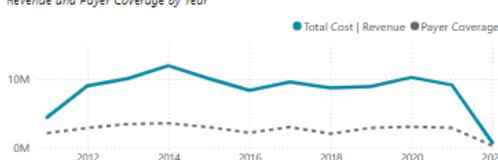
Total Revenue

\$3.640

avg_cost

Lack of growth in both revenue and payer coverage

Revenue and Payer Coverage by Year



Longer Stay - More Expensive: Sepsis and COVID-19 are the most costly

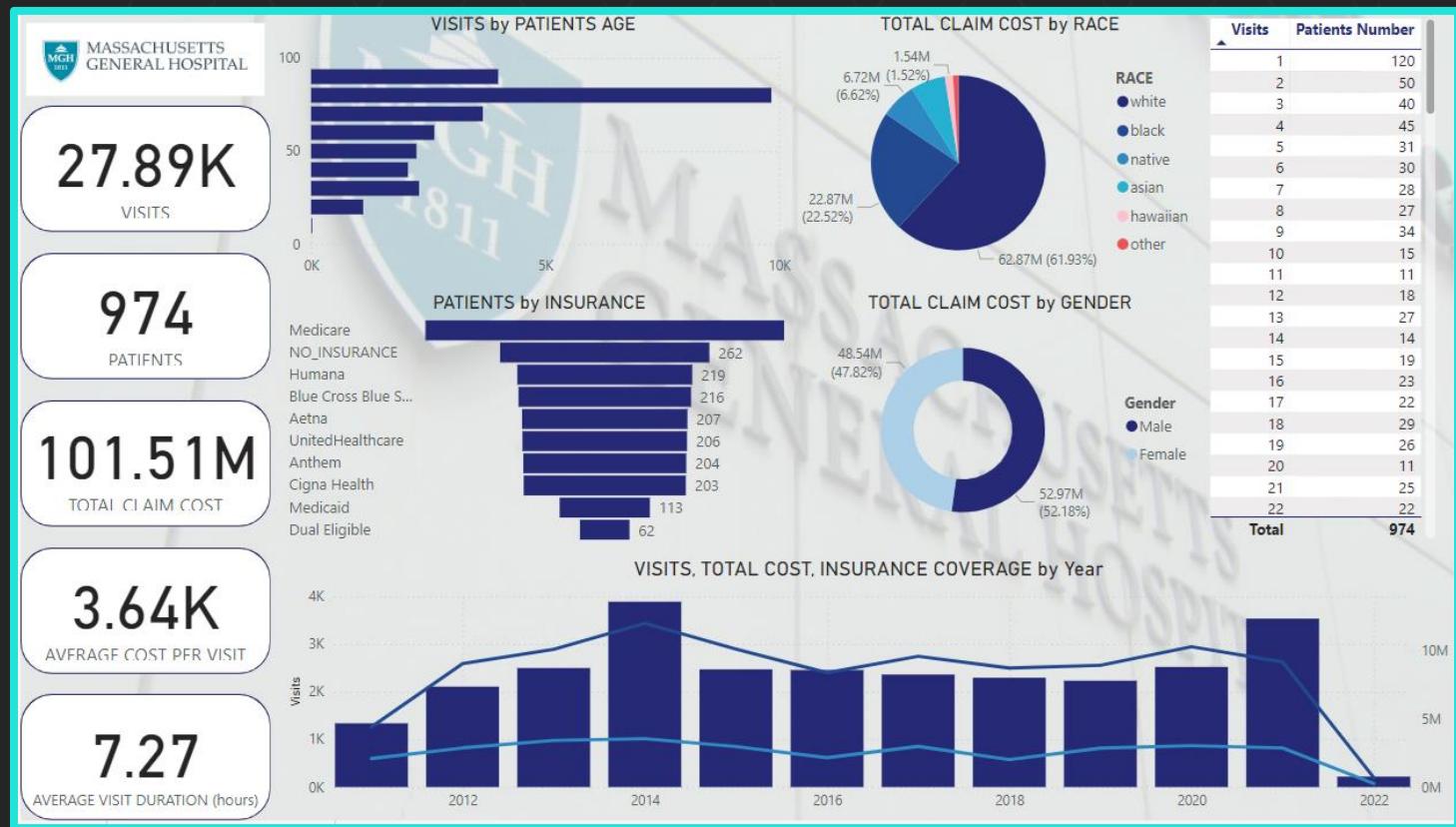
Top 10 Average Cost by Conditions



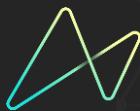
Huy Hoàng Vũ



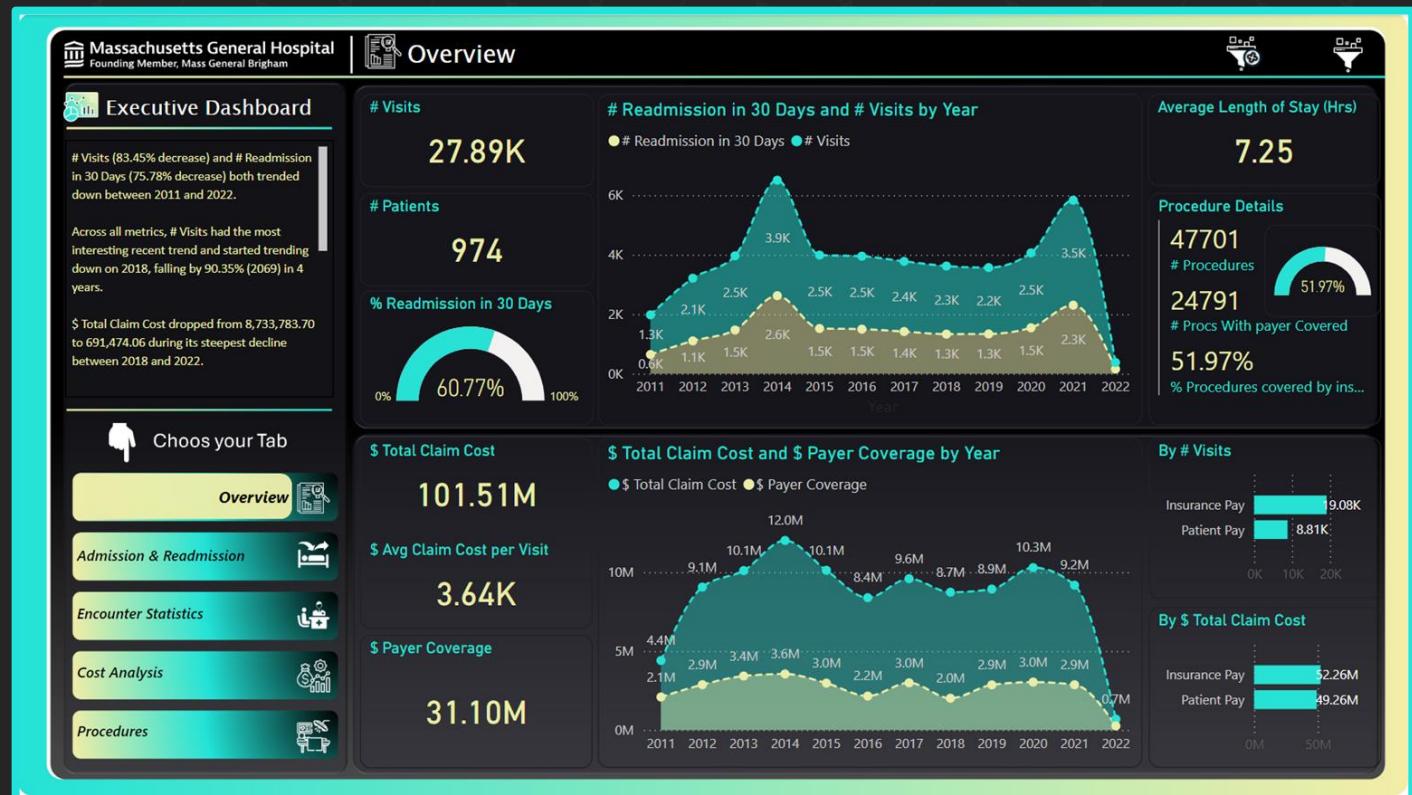
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Mohamed Tarek



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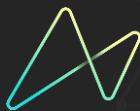
Junaise Pt



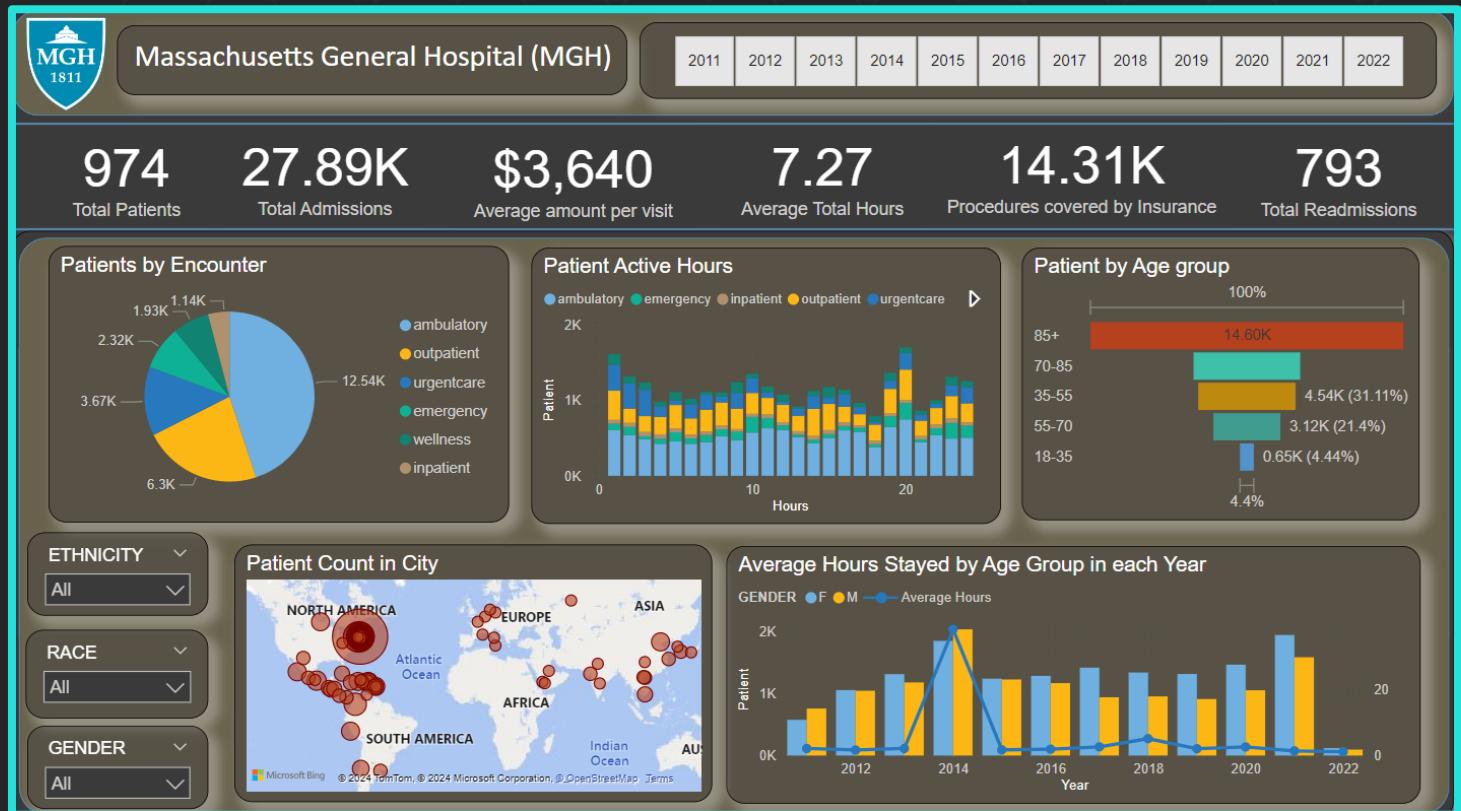
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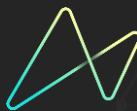
Jacob George



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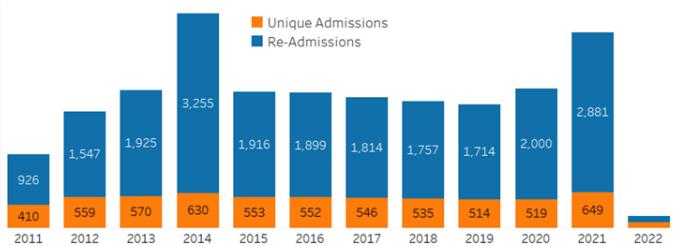
Johar Ali Shaik



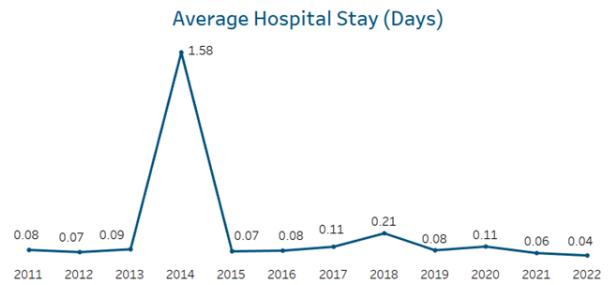
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Maven Hospital Challenge: Massachusetts General Hospital (MGH) - Summary

Patient Admissions



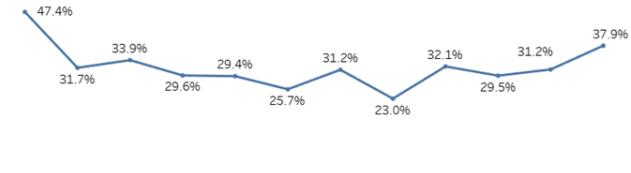
Average Hospital Stay (Days)



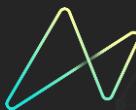
Average Cost per Visit



Insurance Coverage Rate



Fabiola Croes



MAVEN HOSPITAL CHALLENGE

MASSACHUSETTS GENERAL HOSPITAL

Admission Dashboard

Created by: Prosper Onyenkwere

Apply Filter: Year Month Patient

All All

Page 1 Page 2

974 Total Patient	28K Admissions	854 Readmissions	48K Procedures	25K Procedures Covered by Insurance	7.25 Avg. Length of Stay(Hours)	\$3,640 Avg. Cost Per Visit	\$101.5M Revenue
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Patient Distribution by Race

Race	Count
white	680
black	163
asian	91
other	16
hawaiian	13
native	11

The hospital received more **Male patients**, accounting for **50.72%** of the total patient population.

Patient's Gender Distribution

Gender	Percentage
F	49.28%
M	50.72%

Payers

Payer	Admissions	Procedures	Procedures Covered by Insurance	Procedures Covered by Patient	Procedure Co
Medicare	11,371	19512	19492	20	\$27,312,20
NO_INSURANCE	8,807	15102		15102	\$50,166,6
Medicaid	1,443	2893	2887	6	\$9,125,4
Humana	1,084	1999	16	1983	\$3,691,2
Aetna	936	1457	61	1396	\$2,593,0
Blue Cross Blue Shield	925	1512	1220	292	\$2,921,2
Total	27,891	47701	24791	22910	\$105,517,7

Avg. Length of stay by Ethnicity

Ethnicity	Avg. Length of Stay (hrs)	Percentage
Hispanic	5.80	(43.45%)
Non-Hispanic	7.54	(56.55%)

Non-Hispanic Patients stayed longer with avg. length of stay **7.54hrs**

Total Patient by Age Bracket and GENDER

Age Bracket	M	F
90+	~100	~100
81-90	~70	~80
71-80	~60	~65
61-70	~55	~60
51-60	~50	~55
41-50	~45	~50
31-40	~35	~40

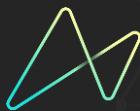
A total of **138 male** and **122 female** patients aged **90** and above were admitted to Massachusetts General Hospital.

Avg. Length of Stay(Hours) By Encounter Class & Age

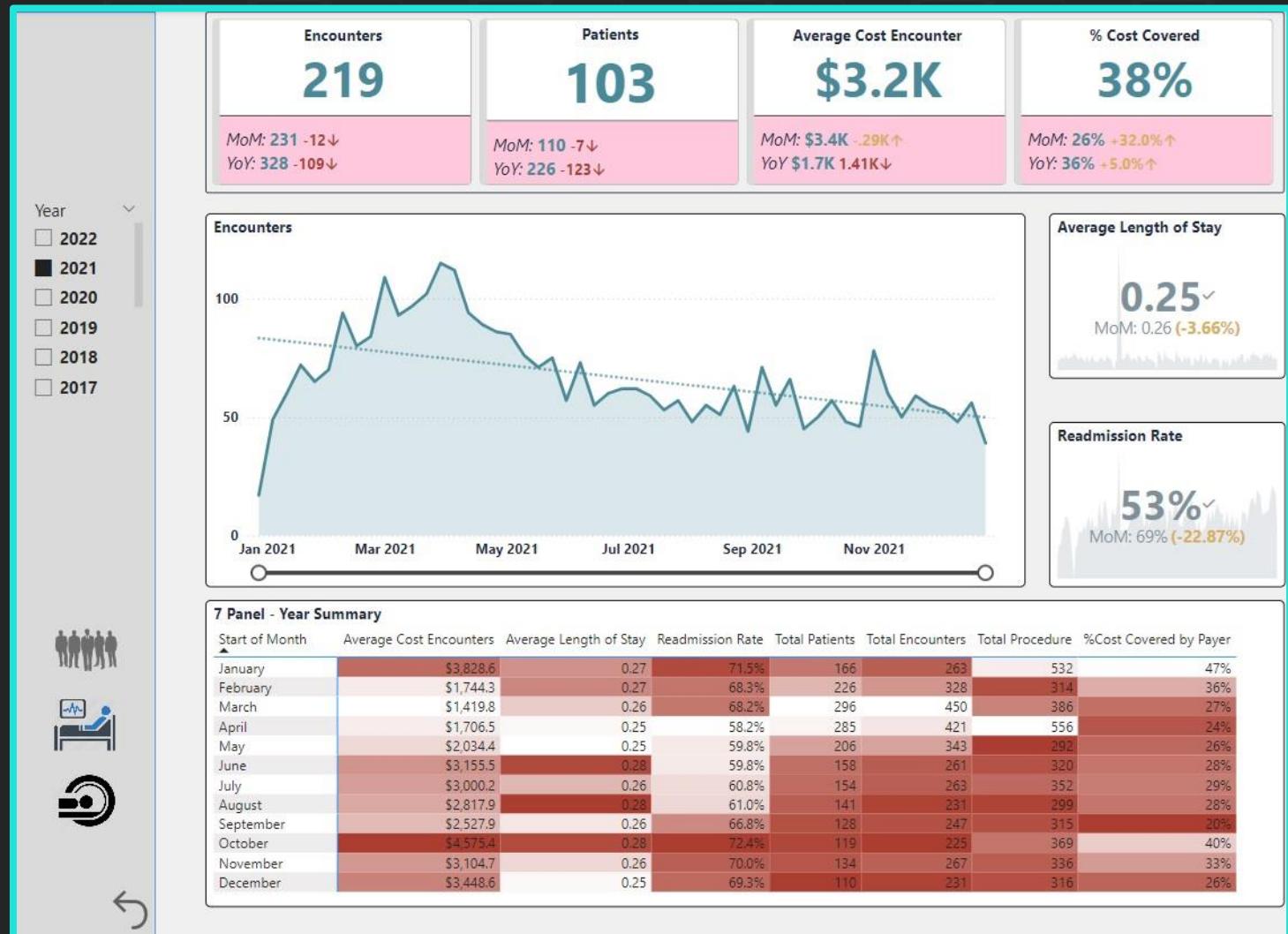
ENCOUNTER CLASS	31-40	41-50	51-60	61-70	71-80	81-90	90+
Ambulatory	40.75	58.03	0.34	1.08	0.32	0.28	1.59
Emergency	3.11	8.01	1.03	1.00	1.28	1.03	1.01
Inpatient	48.38	33.79	31.91	32.29	75.61	28.17	28.22
Outpatient	2.66	4.86	10.02	0.28	16.10	2.22	5.36
Urgentcare	0.42	0.20	0.13	0.62	0.09	0.46	0.13

Note: Patients that stayed longer in the Hospital under the Encounter Class and Age Bracket is marked with a darker shade of green.

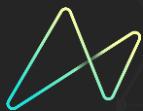
Prosper Onyenkwere



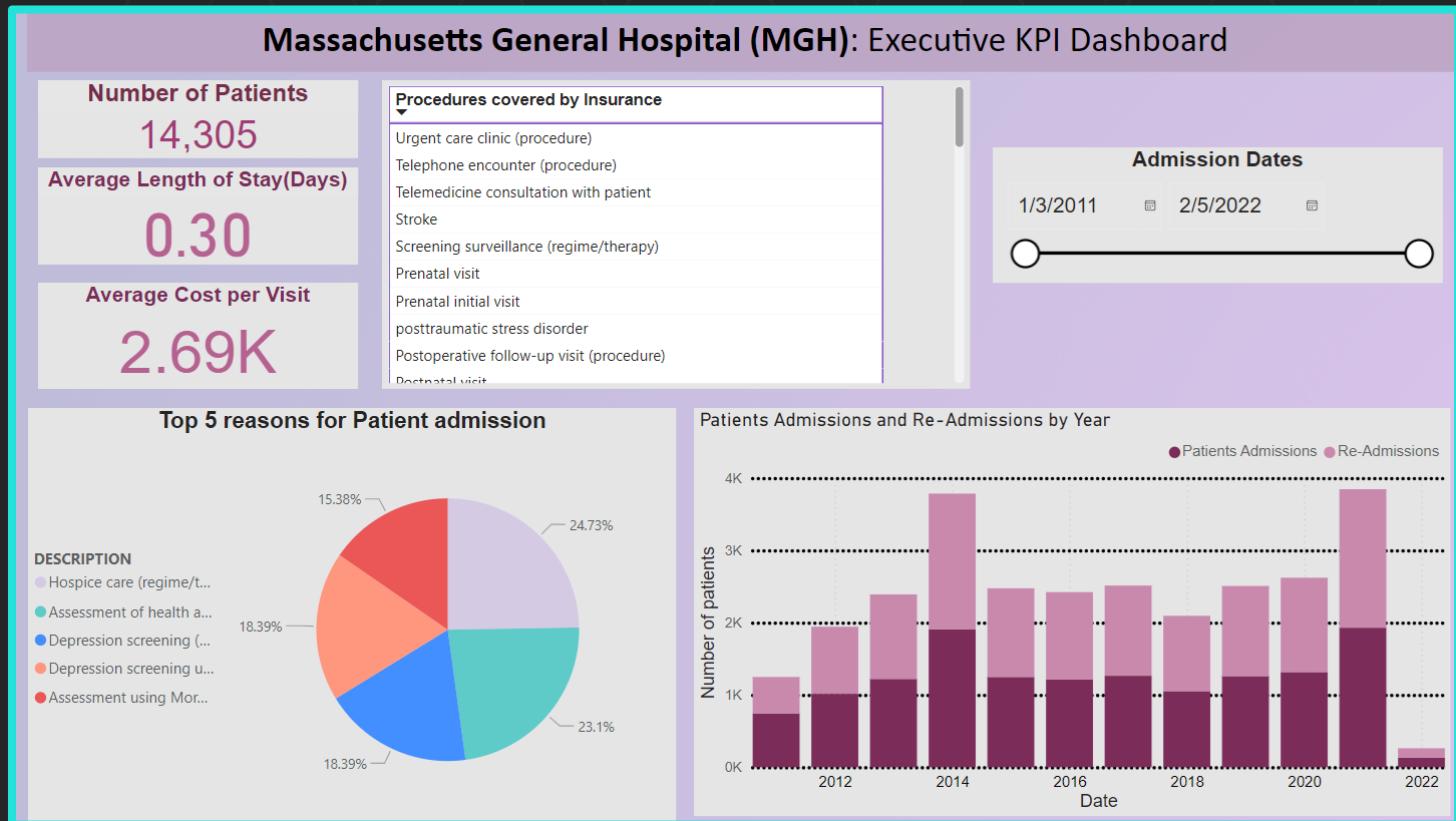
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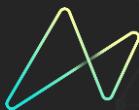
Pierluigi Stallone



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Heta Parekh



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Analytics Consultant
Bruklyn KE Januk

Executive Summary & Important KPI Definitions

Hospital Accommodation Metrics:
Occupancy %: This metric represents how full the hospital is based on people admitted.

Summary:
Occupancy is extremely low at 33%. The highest occupancy we achieved was in 2015, 2019 & 2020. On average, we are decreasing in encounters by -06.1%.

Hospital Admission

Summary:
Admissions are at all time low compared to previous years. With an average patient stay of 4.38 days.

Revenue

Summary:
We are looking at no growth for the next 8 years just general fluctuations staying around the 10mil mark YoY.

Procedures:

Summary:
We have a high successful procedure % with only 45 recorded deaths between 2011 to 2021.

Reason:
All
Organization:
All
Insurance:
All

Total Encounters
27671
Avg YoY 2,516 -06.1%

Occupancy %
33%

Encounters Trend by Year
(● Encounters ● Cumulative (Sum) Encounters)

Avg

Hospital Accommodation (Occupancy % Based of Max Patients YoY)
(● Occupancy % ● Cumulative (Average) Occupancy %)

Occupancy % (Based of Max Patients Admitted) by Year
(● Occupancy % ● Cumulative (Average) Occupancy %)

Admission %
7%

Average Stay (Days)
4.38

Revenue
100,822,901.46 Total Revenue
3,643.63 Avg Cost per Patient

YoY Revenue Forecast and Historic Trend
20M

Insurance Payout
30,835,147.40 Insurance Payout
69,987,754.06 Patient Payout

Insurance Payout %
30.58%
69.42% Patient Payout %

Procedures(Success Rate%)
(● Failed Procedures ● Successful Procedures %)

Successful Procedures %
99.9%

Failed Procedures
45

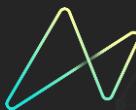
Total Procedures Trend By Year
(● Failed Procedures ● Successful Procedures %)

Concerns & Recommendations:

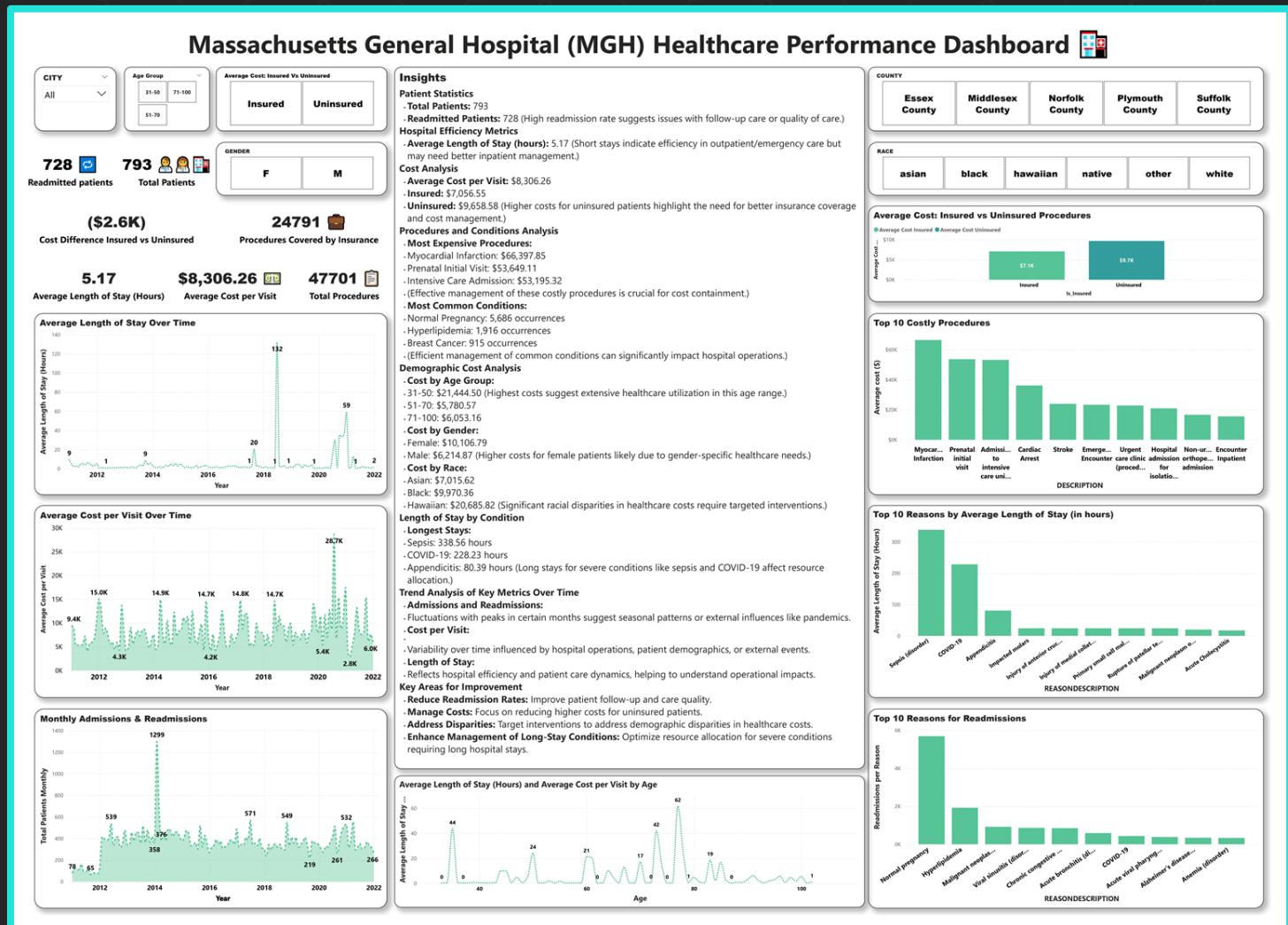
YoY our encounters are decreasing by -06.1%. I recommend we understand our customer satisfaction with the hospital. This will help us understand if our services are not on par or optimized for optimal CX experience.

Forecast for Revenue shows no growth for the next 8 years. I recommend we boast our social media presence and up our service game through the analysis of a CX survey. Improving our encounters will directly improve our revenue generation.

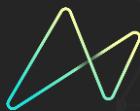
Bruklyn Januk



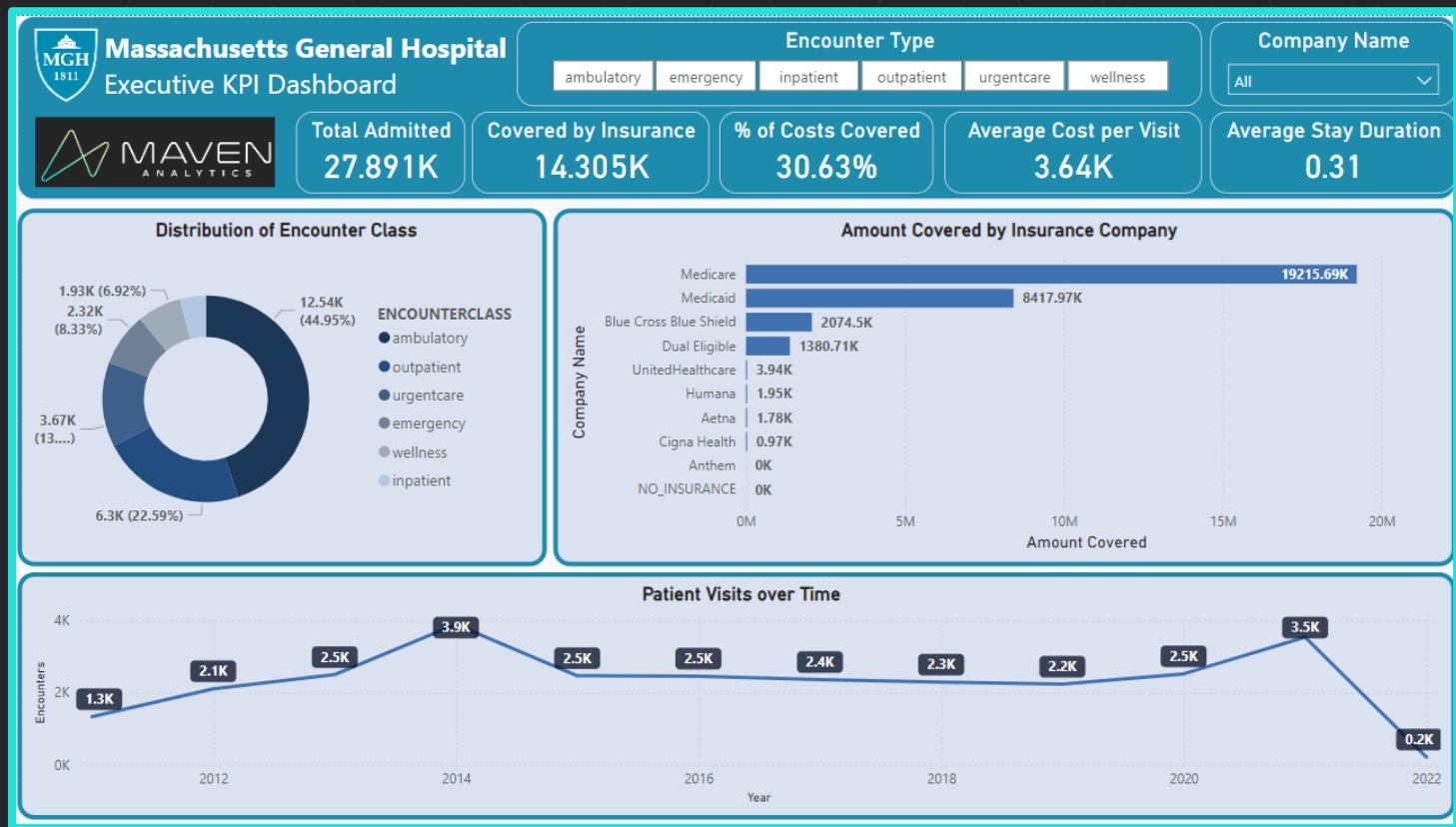
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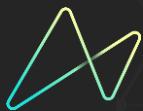


Henry Dibie

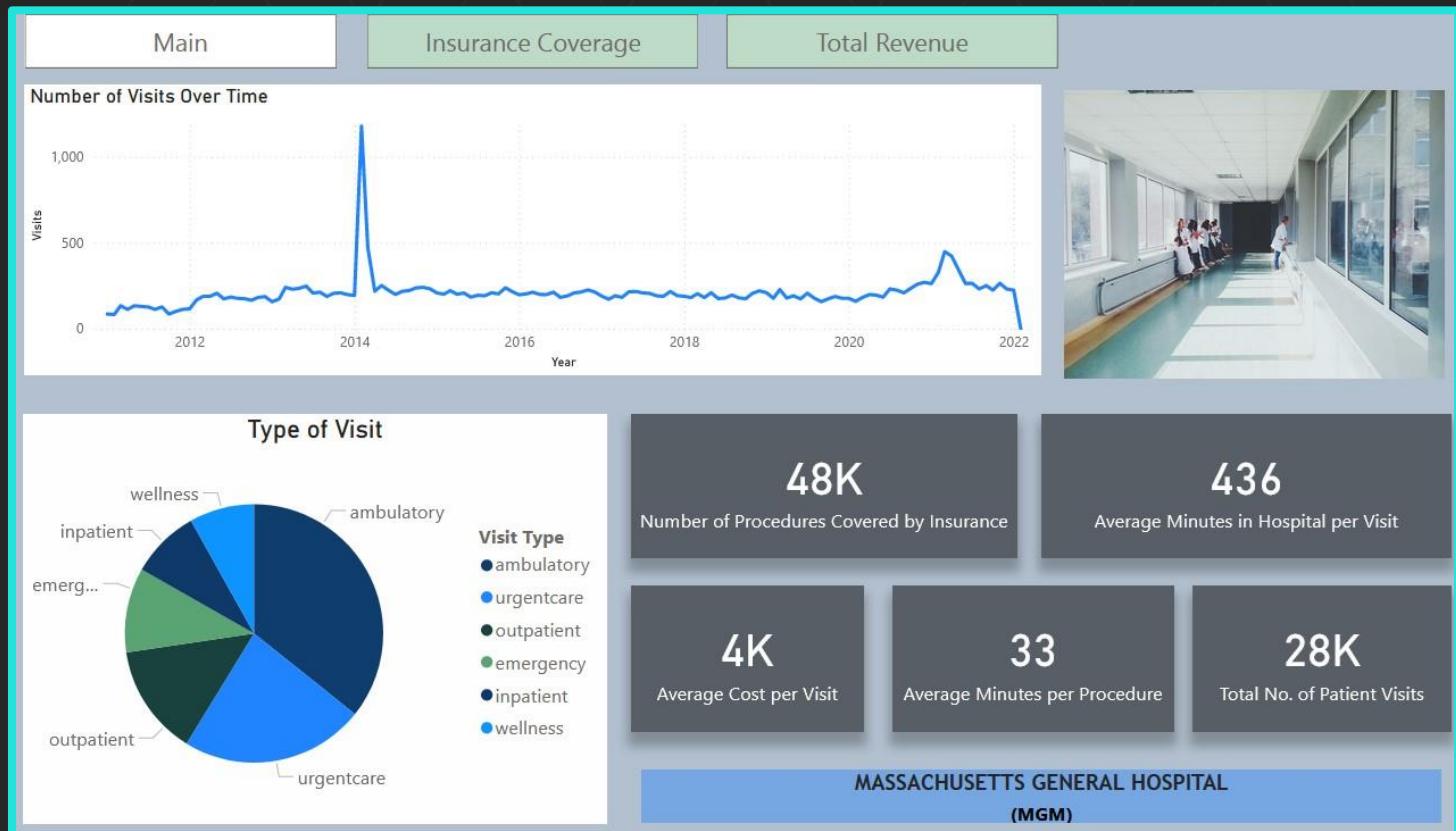


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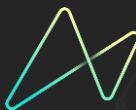




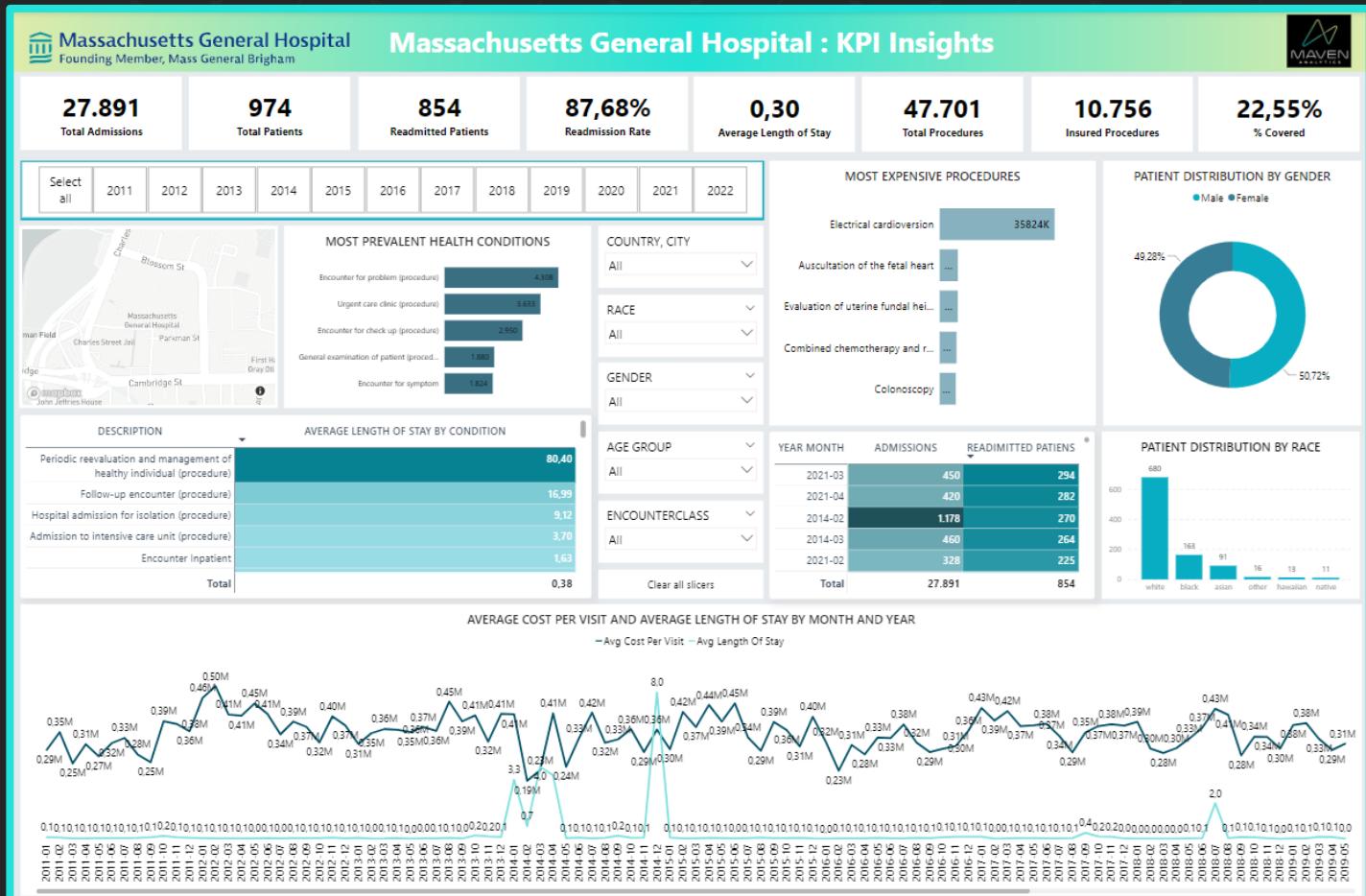
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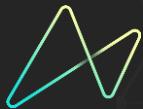
Lisa Ballinger



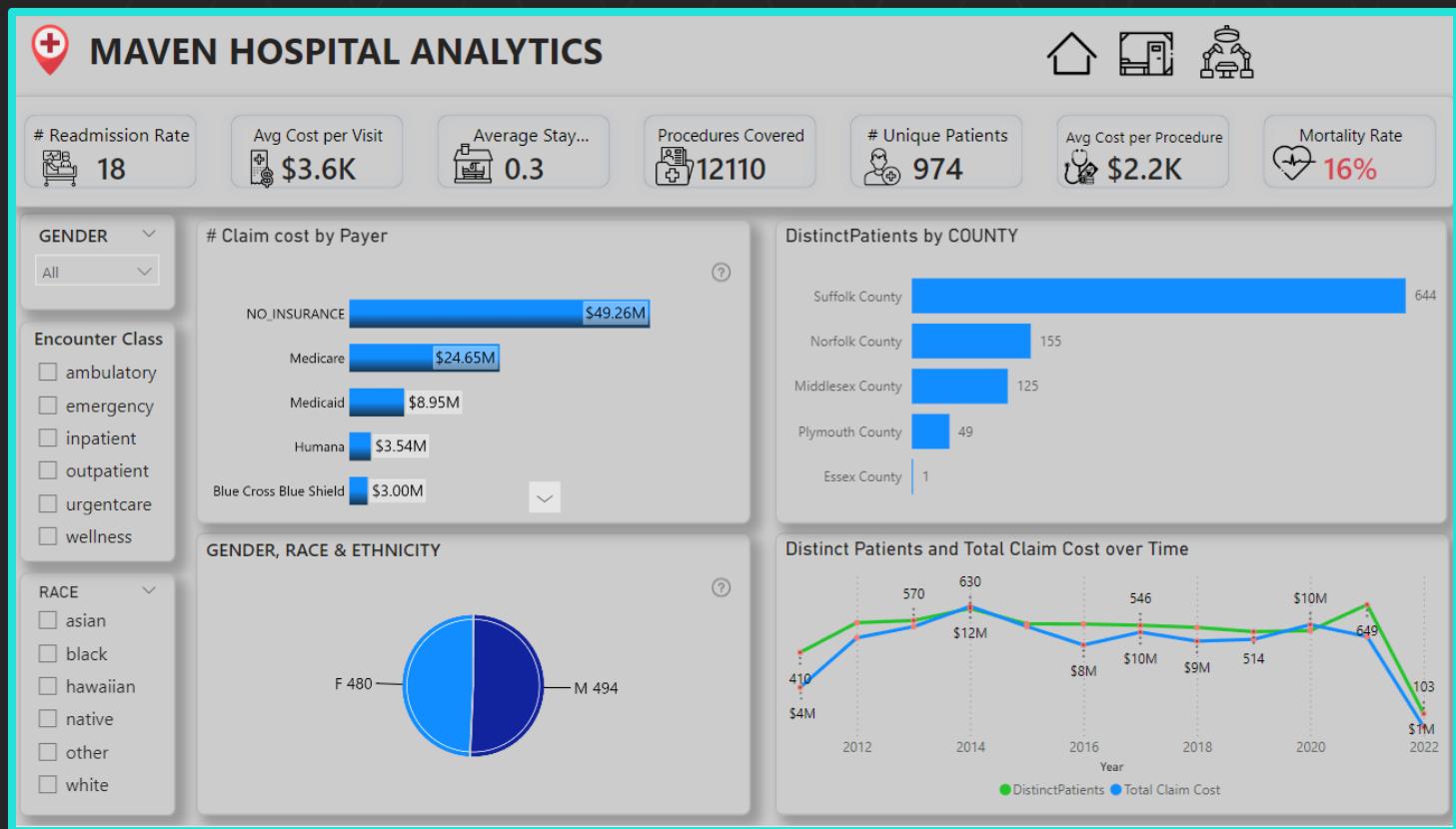
MAVEN HOSPITAL CHALLENGE



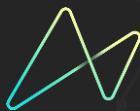
Anxhela Murati



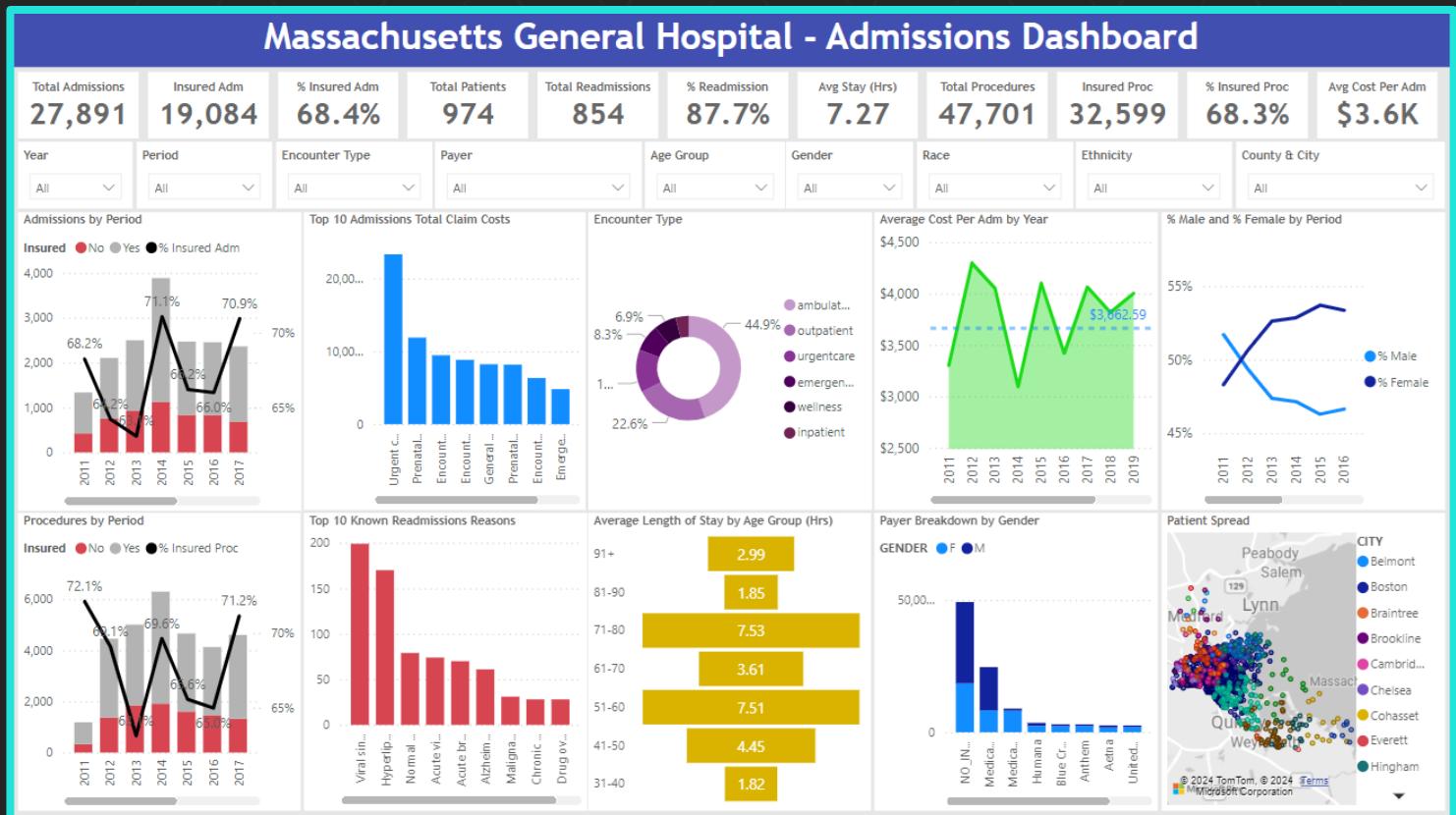
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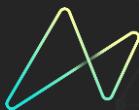
Ryansh Datta



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Kian Leong Ho



MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital
 Founding Member, Mass General Brigham

Patient Encounter Status and Financial Analysis of the Hospital ?

27891
Total Encounter
47701
Total Procedure
974
Total Patient
102M
Total Claim
15.81%
Mortality %

COUNTY
CITY
RACE

All
All
All

Total Patient and Procedures Trending.
Revenue Trending?

Patient Encounter and Procedures Trending. No of encounters has generally increased, peaking around 2015 with approximately 3.2K encounters, followed by a decline and stabilization around 2.2K to 2.4K encounters per year from 2017 onwards. Patients undergoing procedures has remained relatively stable, ranging from 82 to 448 patients per year. (Drill Down for Month)

Year	Total Patient	Total Procedure
2010	1336	82
2011	2495	3967
2012	387	448
2013	371	387
2014	2360	359
2015	2230	3531
2016	359	42

Revenue Trending? The highest total claims were recorded in 2012 and 2018. These years might have higher patient volumes, more procedures, or increased cost per procedure. The substantial drop from 2018 to 2020 could be due to policy changes, improvement in outpatient care, or external events like the COVID-19 pandemic affecting hospital services

Year	Total Claim
2010	4.4M
2011	12.0M
2012	8.4M
2013	8.7M
2014	10.3M
2015	0.7M

Who paid the claim?
How much covered by payer ?

Payer	Percentage
Anthem	2.94%
Humana	3.49%
Medicaid	8.82%
Medicare	24.28%
NO INSURANCE	48.52%

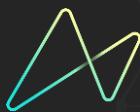
Payer Type	Percentage
Covered	37.85%
Not covered	62.15%

Which Encounter class generate more revenue?
Which Top 100 Patient received most service?

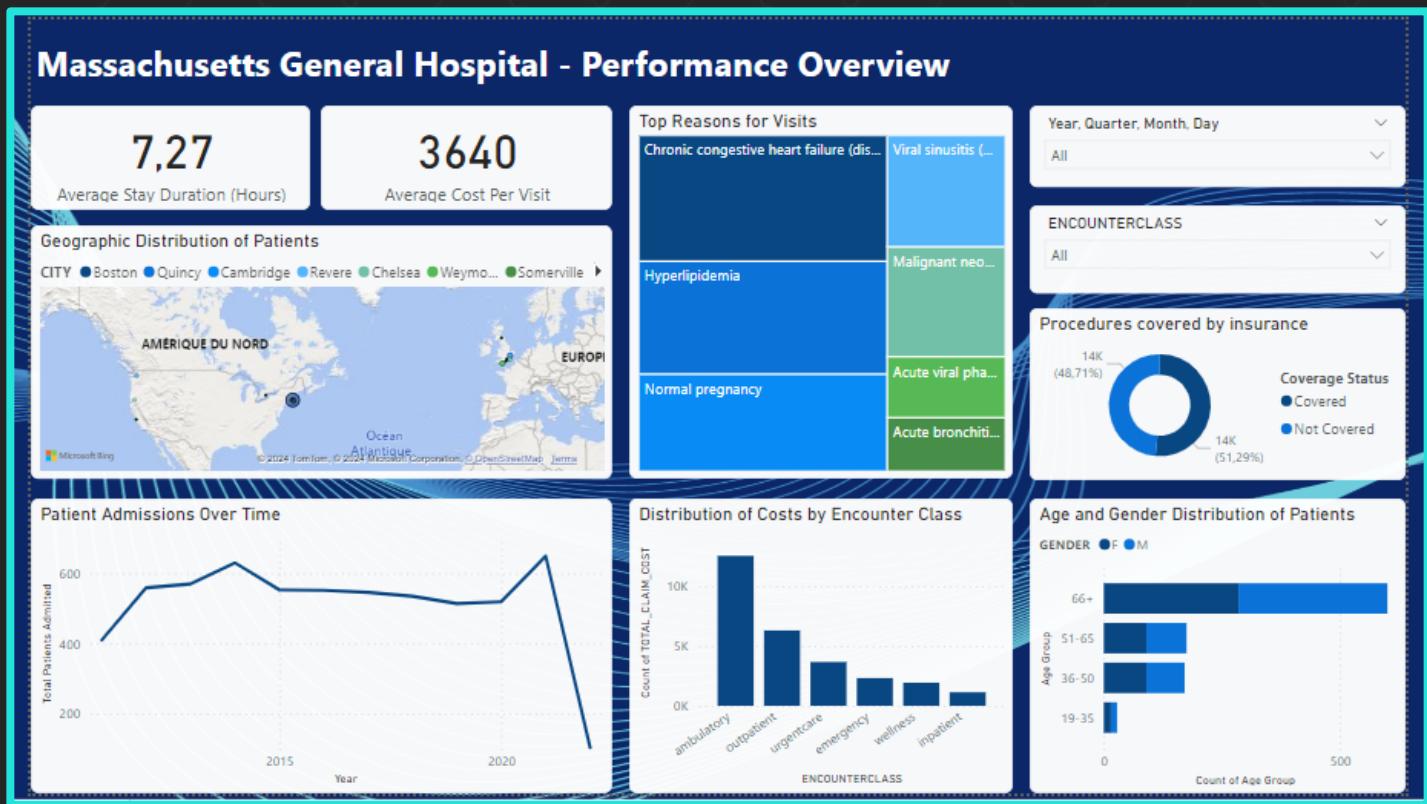
Encounter Class	Total Claim (Encounter)
ambulat...	15M
urgencare	21M
outpatient	4M
emergen...	9M
Inpatient	19M
wellness	3M

Patient Name	Total Encounter	Total Procedure	DESCRIPTION
Kimberly627	1381	1167	Renal dialysis (procedure)
Mariano761	1260	713	Renal dialysis (procedure)
Shani239	887	694	Renal dialysis (procedure)
Gail741	447	351	Electrical cardioversion
Abraham100	59	230	Hospice care (regime/therapy)
Eugene421	291	225	Electrical cardioversion
Ike571	38	219	Hospice care (regime/therapy)
Mateo562	35	201	Hospice care (regime/therapy)
Mariano761	1260	197	Hospice care (regime/therapy)
Total	13196	29089	

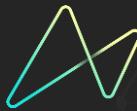
Mohammad Nazmul Ehsan



MAVEN HOSPITAL CHALLENGE



Soukaina Khalyl



MAVEN HOSPITAL CHALLENGE

MASSACHUSETTS GENERAL HOSPITAL

Total admissions: 28K Admissions over time: 28K Average cost per visit: 3,64K Hours: 7,25 Cost over time: 106M Total procedures: 48K

GENDER: All ETHNICITY: All COUNTY: All Date: All

In 2014 and 2021, the admissions were at their highest point.

The "decrease" of 2022 is due to the data stopping at February 2022.

The highest average length of stay was of 38.07 hours in 2017, against a lowest of 1.15 in 2022.

Overall, the non-hispanic patients had a longer stay with an average of 7.54.

The average total claim cost per encounter and the average of procedures base cost follow globally the same trend.

When the procedures will be more expensive, the total cost during the visit will be impacted. There is a drop of both in 2021 Q1 and an increase in 2011 Q3.

Medicare is the most used one and also covers a considerable amount of the costs undertaken in the hospital. Aetna, Anthem, Cigna Health, Humana and UnitedHealthCare that did not cover or a very limited amount.

A considerable amount of people are not insured when performing a procedure.

Patient admissions/readmissions over time

Total: 1,3K, 3,9K, 2,4K, 2,2K, 3,5K
Per patient: 0,2K

Average length of stay over time

Year	hispanic	nonhispanic	Total
2011	1,83	2,11	2,07
2012	0,81	1,83	1,66
2013	0,94	2,33	2,12
Total	5,80	7,54	7,25

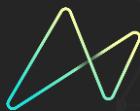
Average cost per visit over time

Average cost per visit: 2K, 4K
Average of procedures base cost: 2K, 4K

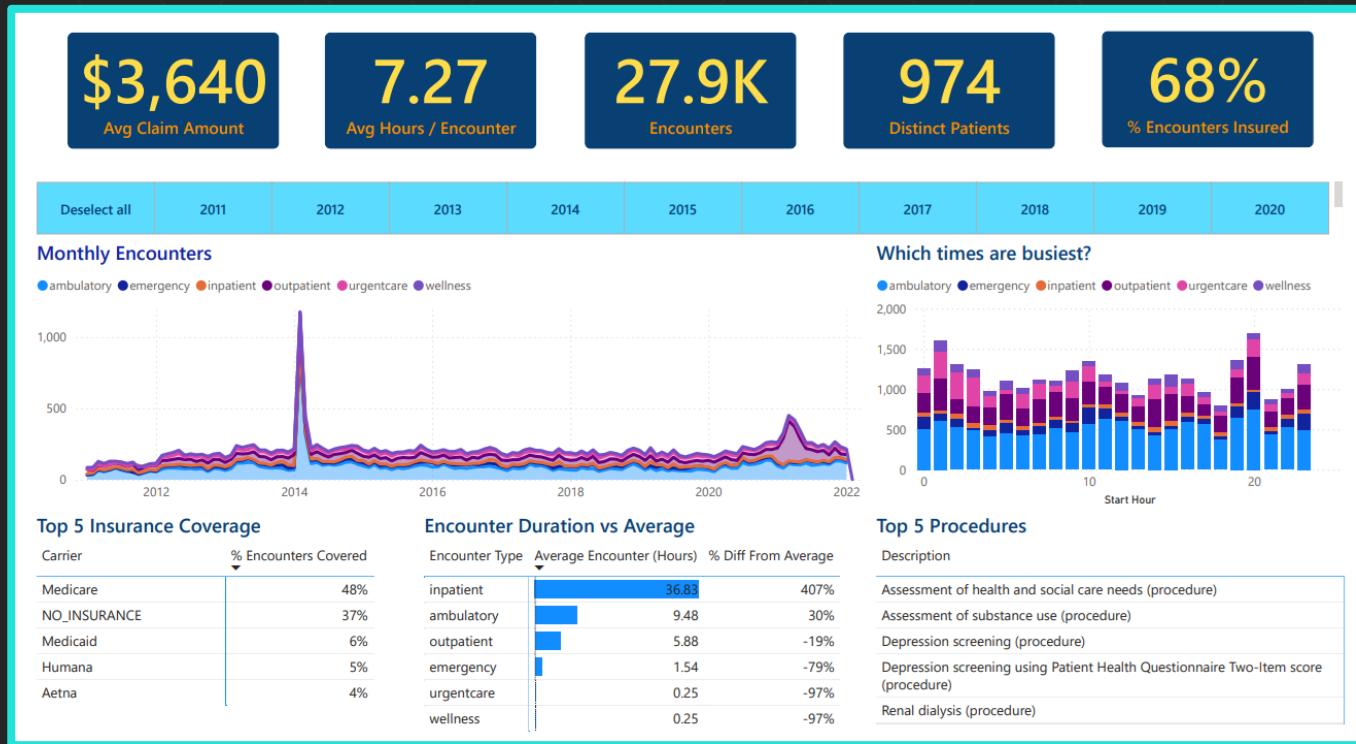
Total procedures covered by institutions over time

Year	al Eligible	Humana	Medicaid	Medicare
2011	26	16	40	643
2012	52	150	211	2106
2013	64	131	378	1855
Total	1162	1999	2893	19512

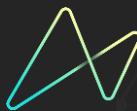
Maria Anaya



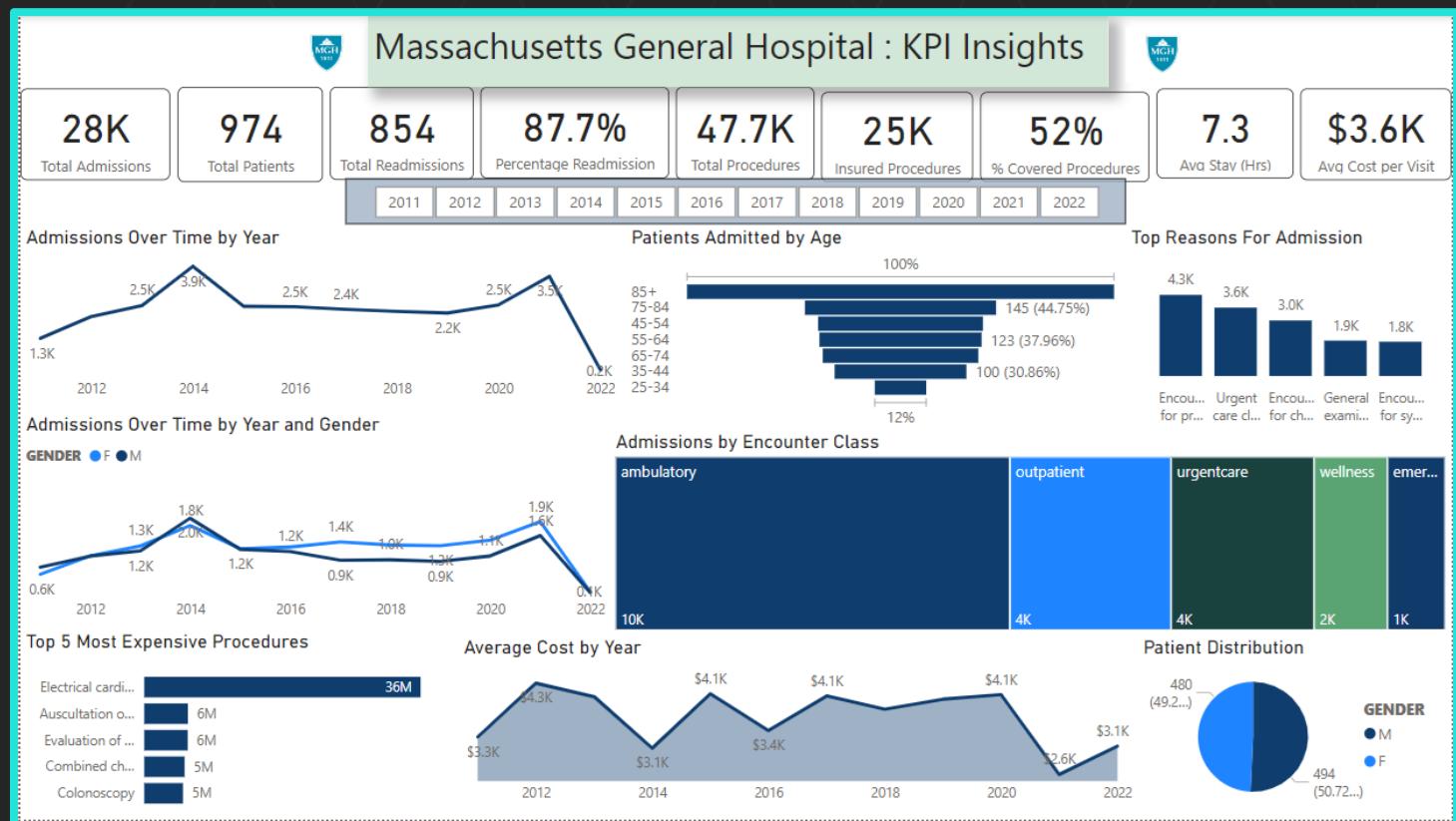
MAVEN HOSPITAL CHALLENGE



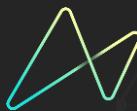
Alicia Key



MAVEN HOSPITAL CHALLENGE



Shefalika Thapa



MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital
Report Page 1 of 2

2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

MAVEN ANALYTICS
Submission by: Ashish Kadam

974
Total Patients till date

Patients Staying in Hospital (Hrs)
7.34
on an Average

Average Cost Per Visit (Considering Claims)
\$2,525

• Unique Procedures Covered Uncovered



Total Procedures Covered by Insurance
24,791

27,891

Encounters

2,02,655

Hours Encountered

436.0

Avg-Encounter Minutes

47,701

Procedures

26,442

Hours Procedured

33.3

Avg-Procedure Minutes

Encounters vs Procedures Over Time

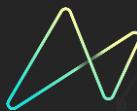


Patients Admitted, Re-admitted Over Time

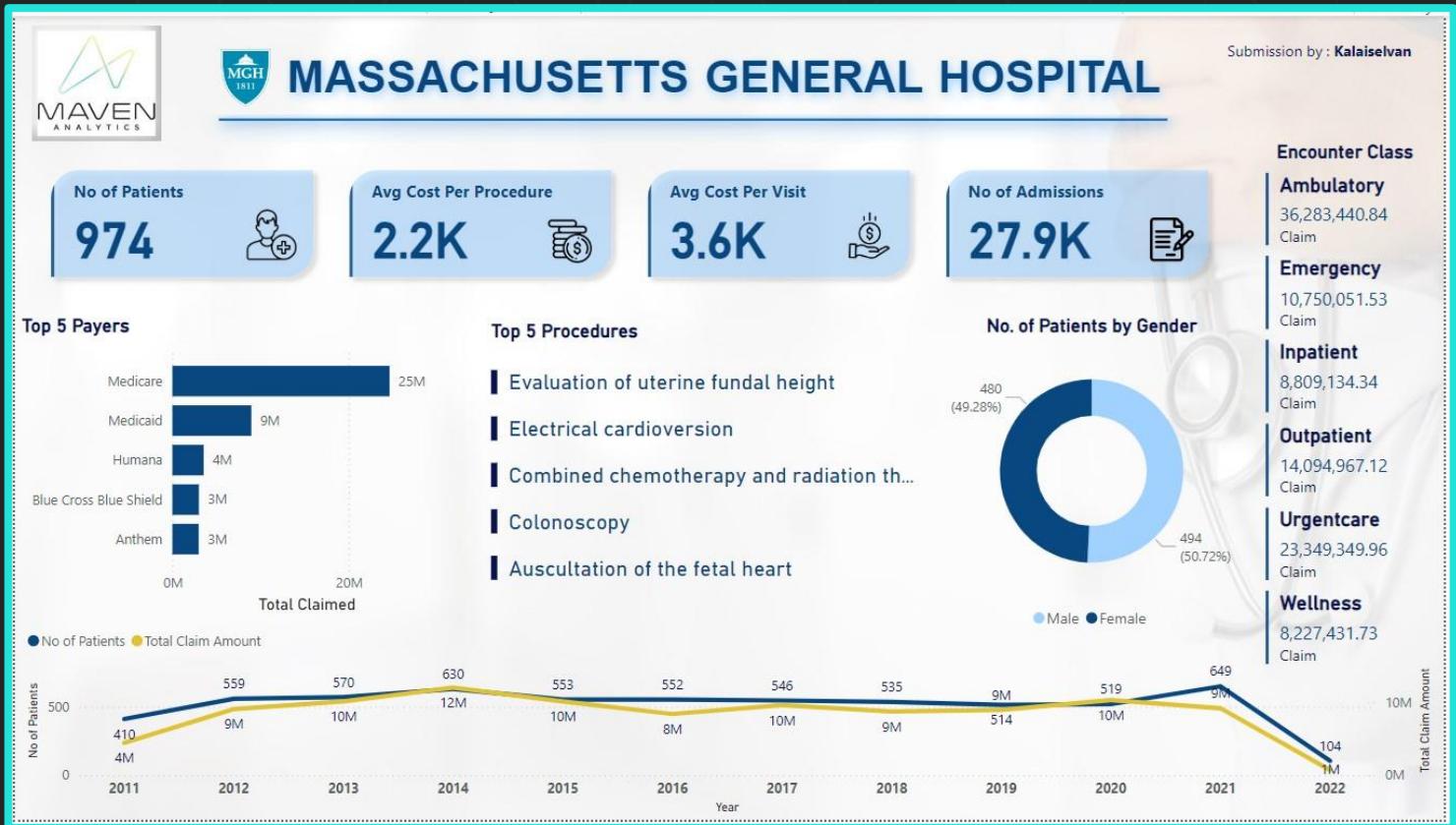


Maven Hospital Challenge

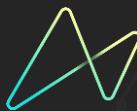
Ashish K



MAVEN HOSPITAL CHALLENGE



Kalaiselvan P



MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital Executive Dashboard

27,891
Encounters

974
Patients

\$101.51M
Total Claims

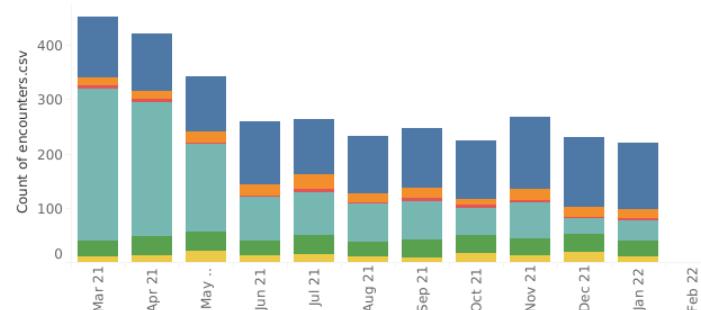
7.254 hours
Avg. Time Spent

\$3,640
Average Claims

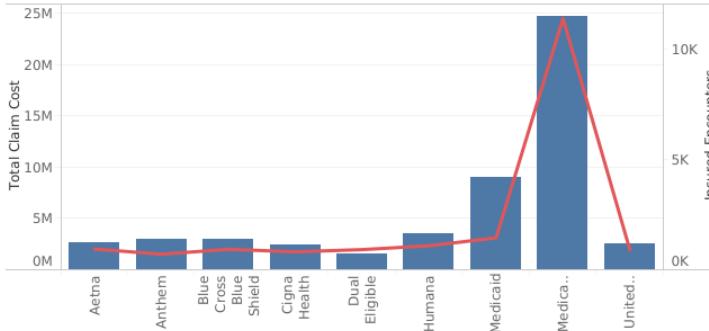
■ Ambulatory ■ Emergency ■ Inpatient

■ Outpatient ■ Urgentcare ■ W

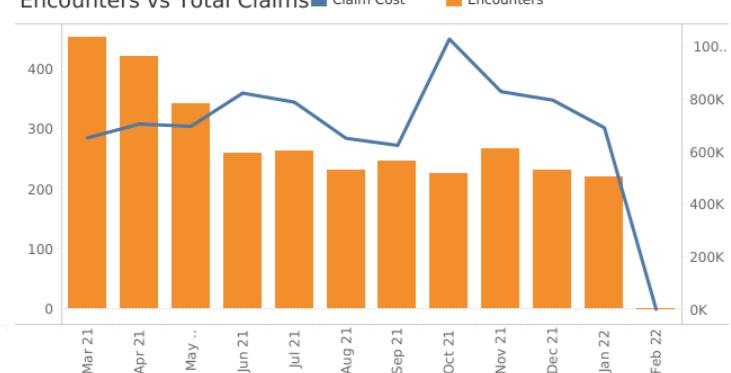
Encounter Type



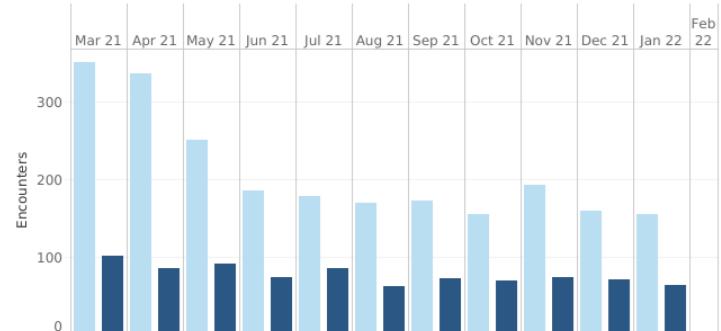
■ Claim Cost ■ Insured Encou..



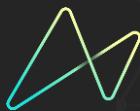
■ Claim Cost ■ Encounters



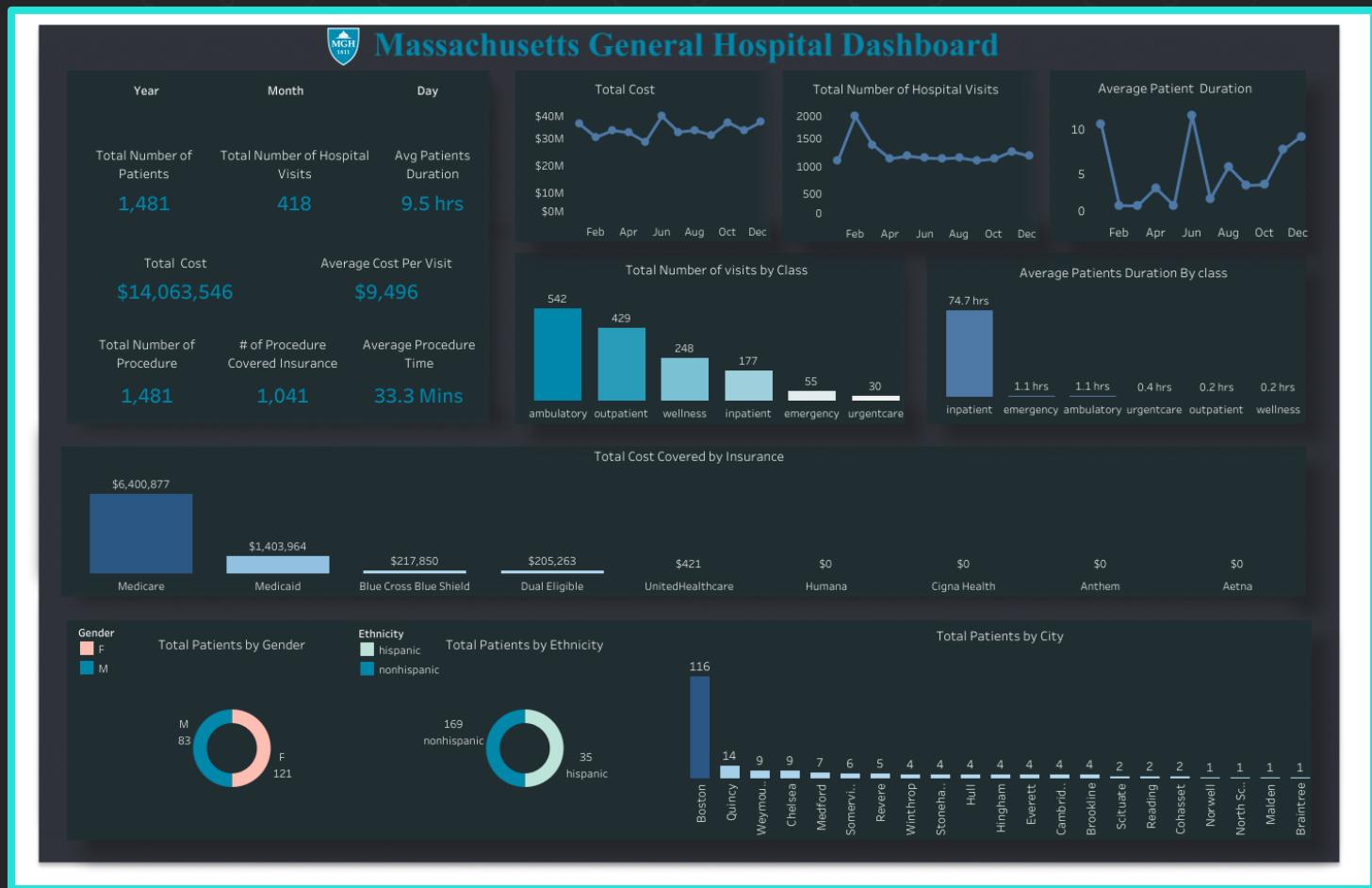
■ Insured ■ Uninsured



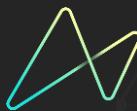
Ewaoluwa Osunrayi



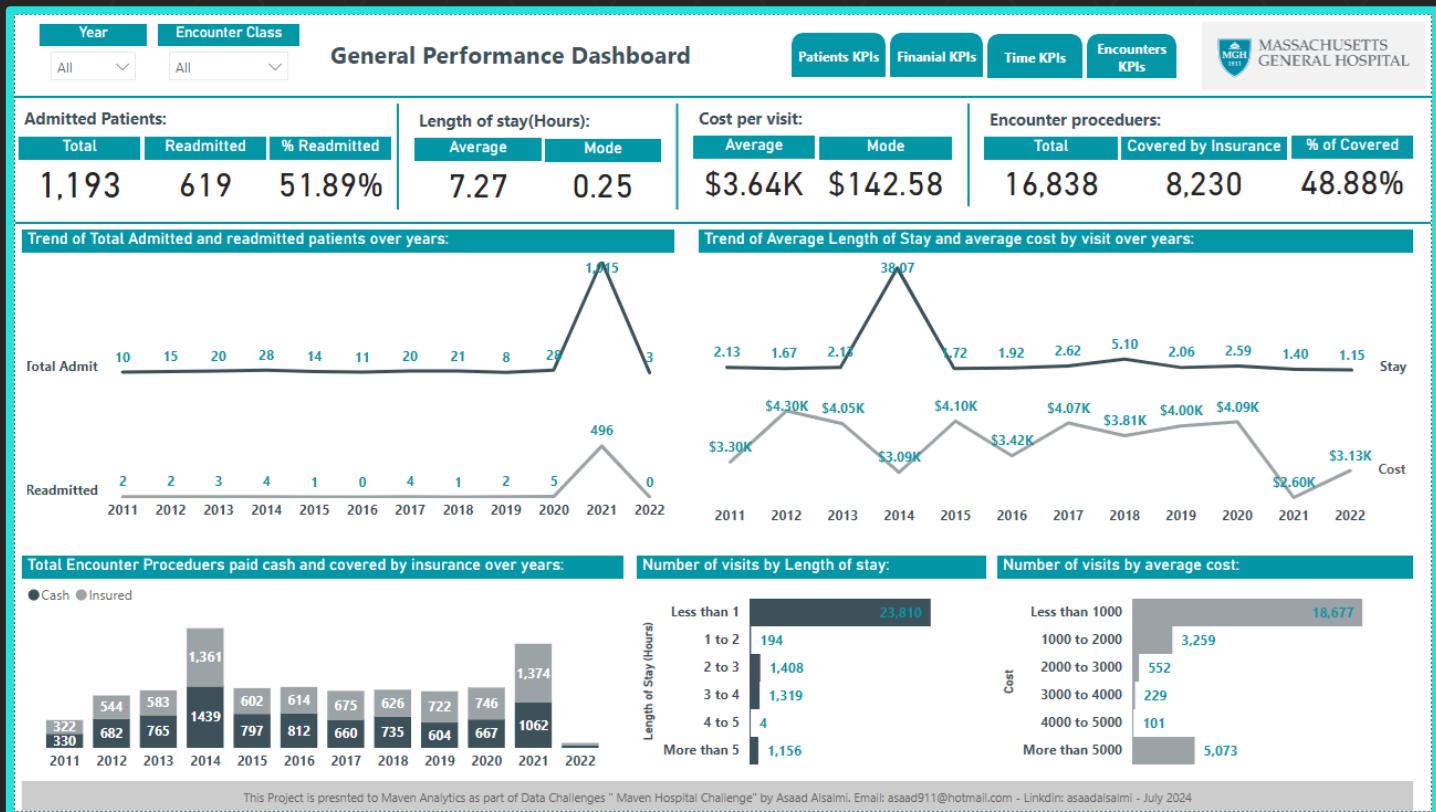
MAVEN HOSPITAL CHALLENGE



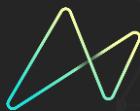
Richard Oloyede



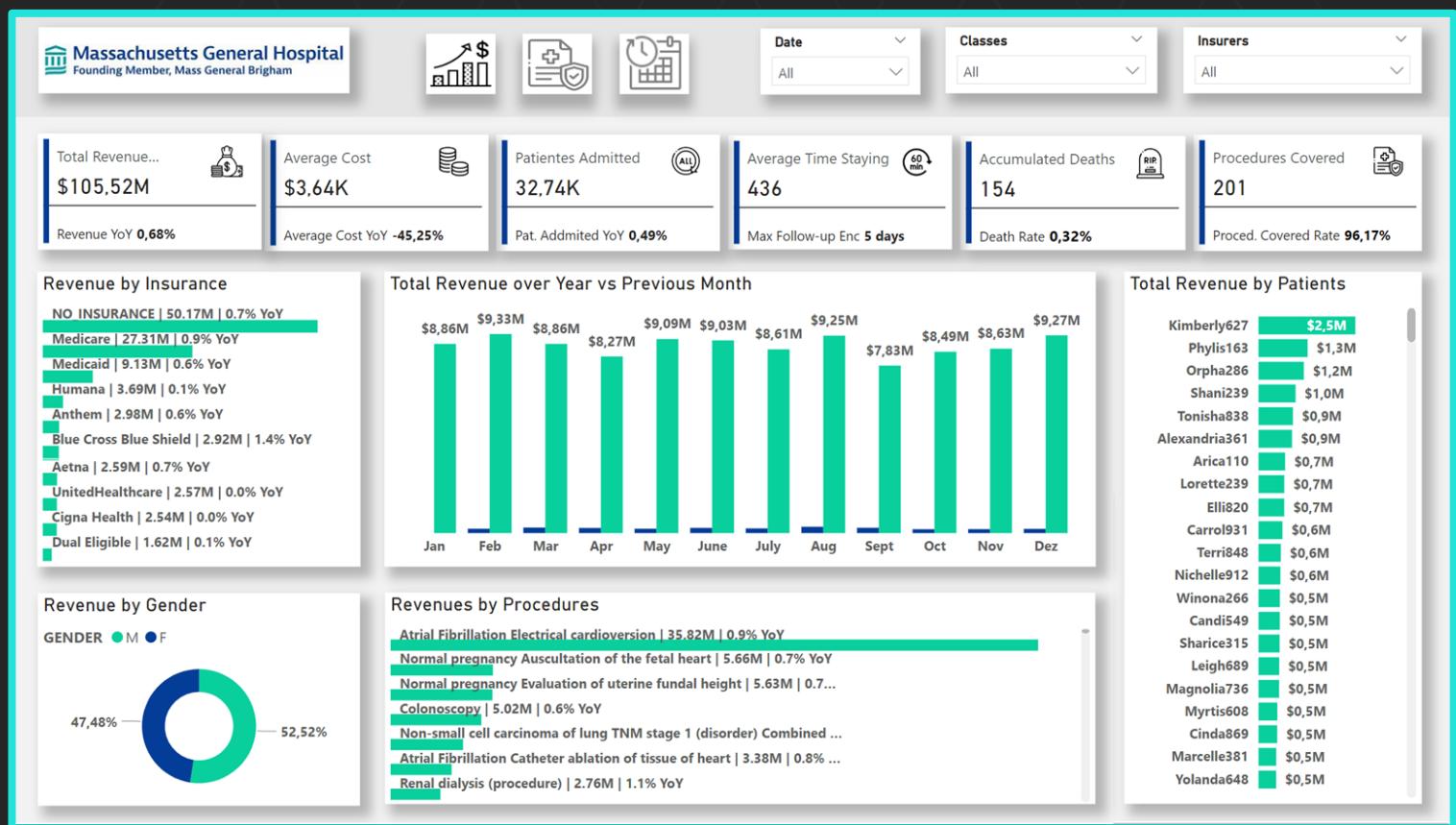
MAVEN HOSPITAL CHALLENGE



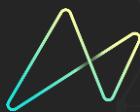
Asaad Alsalmi



MAVEN HOSPITAL CHALLENGE



Orlando Junior



MAVEN HOSPITAL CHALLENGE

Massachusetts General Hospital Performance Overview

Select Year: All

Total # of patients	# of Admission visit (Inpatient)	# of Readmission visit	Readmission Rate	# of Outpatient visit	Average hours staying in hospital
974	14,715	8,384	57.0%	12,221	7.4

Total Average cost per visit	\$ cost covered by insurance	\$ cost not covered	% of cost covered by insurance
\$7,686	\$38,418,357	\$168,613,729	18.6%

Admission vs Readmission by day, week, month range

Enter Date Range: 01/01/2011 to 31/12/2022

Total Admissions	Total Readmissions
14,715	8,384

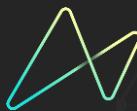
Performance over time

Fig 1: # Admission vs Readmission

Fig 2: Readmission Rate %

About the report Overview Visit by patient type

Stella Lastname

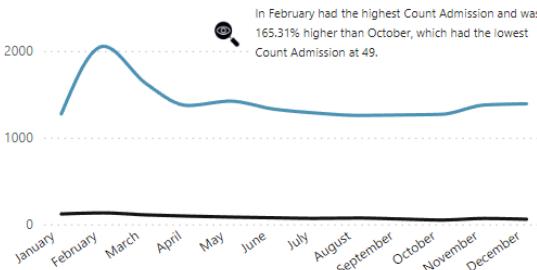


MAVEN HOSPITAL CHALLENGE

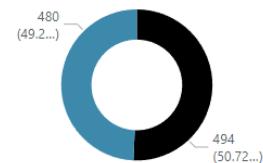
Massachusetts General Hospital Founding Member, Mass General Brigham

How many patients have been admitted or readmitted over time?

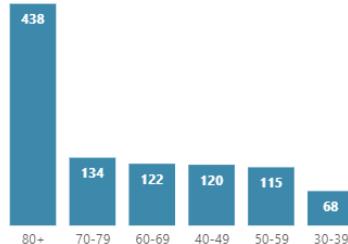
● CountAdmission ● CountReAdmission



Total Patient By Gender



Admitted Patients By Age Group



Year
All

Month
All

Payers	Admission	Covered Procedures	Claim Cost
Aetna	64	1,457	\$2,589,956
Anthem	58	1,203	\$2,982,715
Blue Cross Blue Shield	61	1,512	\$3,002,166
Cigna Health	55	1,599	\$2,424,533
Dual Eligible	40	1,162	\$1,546,926
Humana	75	1,999	\$3,543,921
Medicaid	67	2,893	\$8,954,131
Medicare	377	19,512	\$24,647,229
NO_INSURANCE	138	15,102	\$49,259,290
UnitedHealthcare	62	1,262	\$2,563,508

Admission coming from ?



Avg Cost Per Visit
\$3,640

Re-admission
16,918

Total Admissions
997

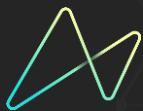
Avg Day Stay
0.30

Total Patient
974

Covered Procedures
47,701

TotalClaimCost
\$102M

Banafsheh Ranjbar Meshkini



MAVEN HOSPITAL CHALLENGE

Massachusetts Hospital

Class
 ambulatory

Payer
 Aetna

Disease
 (Blank)

102M
Total Cost

4K
Avg Cost

974
Patients

28K
Encounters

16.6
Avg L.O.S

10
Payers

Date
1/1/2011

5/3/2022

Admission Trends 2011- 2022

March 2014 recorded the highest number of admissions of 180 patients and the least was 16 patients in September 2011

18 16 61 62

2015 2020

Top 20 length of stay by encounter class

The ambulatory class has the longest stay

Encounter Class	Avg Length of Stay
5d47b...	1872
09e0ec...	1812
8885a...	455

ambulatory emergency inpatient outpatient

Top 20 average cost per visit

The highest average cost per visit is 642000, followed by 3...

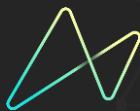
Visit ID	Avg Cost
6c1089...	642K
a28442...	310K
0adf72...	200K
0124fe...	198K
21fddd...	146K
20aecf...	100K

Insurance cover by number of procedures

Medicare covers 40% of the procedures and 32% of the procedures have no insurance cover

Insurance Type	Percentage
Medicare	40%
NO_IN...	32%
Medicaid	14%
Humana	7%
Cigna ...	7%

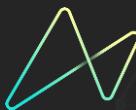
Richard Mukechiwa



MAVEN HOSPITAL CHALLENGE



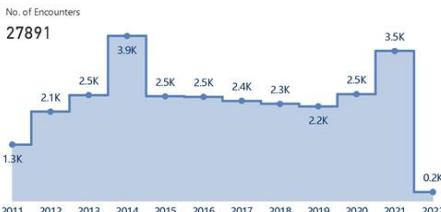
Edward Kelly



MAVEN HOSPITAL CHALLENGE

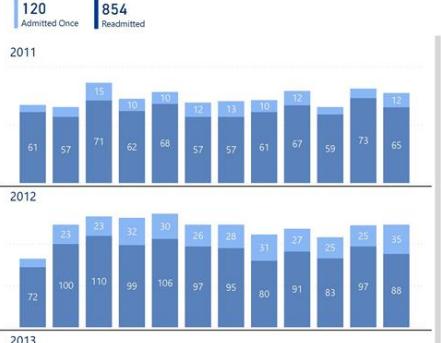
 Massachusetts General Hospital
Founding Member, Mass General Brigham
Month: All
Year: All
Encounters
Cost
Patient
Last Refresh: 7/15/2024 1:43:11 AM

What are the total numbers of encounters over the years?



In 2014, there were **3,883** encounters, accounting for **13.92%** of the total encounters. February 2014 had the highest encounters at **1,181**, followed by March with **463**. The number of encounters increased again in 2021, with a total of **3,530** encounters, and the months of **March** and **April** being the highest with **449** and **423** encounters respectively.

How many patients have been admitted or readmitted over time?



Year	Admitted Once	Readmitted
2011	120	854
2012	61	57
2013	72	100
2014	147	23
2015	275	110
2016	122	32
2017	115	30
2018	111	26
2019	113	28
2020	122	31
2021	117	27
2022	111	35

How long are patients staying in the hospital, on average?



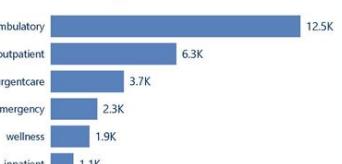
Patients, on average, stayed in the hospital for **7.25 hours** overall. The average duration of stay varied over the years, with 2020 recording the highest average duration at **9.21 hours**. In contrast, 2015 had the lowest average duration of stay at **0.95 hours**. This average stay duration provides a benchmark for understanding the typical length of time patients require hospital care.

What is the total no. of patients admitted over time?

Month	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
January	67	82	109	137	132	119	113	130	114	115	166	104
February	65	123	111	275	122	115	112	111	113	111	226	1
March	86	133	147	265	141	129	126	137	135	123	295	
April	72	131	142	153	129	122	124	124	113	122	284	
May	78	136	130	167	136	114	137	134	127	117	207	
June	69	123	135	165	131	127	130	115	117	111	157	
July	70	123	127	138	129	120	124	115	124	138	155	
August	71	111	145	149	135	116	121	119	115	124	141	
September	79	118	128	144	134	123	117	116	105	116	128	
October	65	108	125	134	116	132	112	111	111	126	119	
November	81	122	123	138	137	128	131	130	122	140	134	
December	77	123	121	138	128	118	120	128	118	139	111	

There is a general increase in admissions over the years, with significant peaks in 2014 and 2021. March, April, and May consistently have higher admissions, with March 2021 reaching the highest count of **295**. February typically sees lower admissions, except for a spike in 2014. The year 2020 shows a decline in admissions, likely due to the COVID-19 pandemic, followed by a sharp increase in 2021.

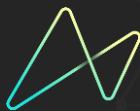
How do encounter classes compare by number of encounters and average duration?



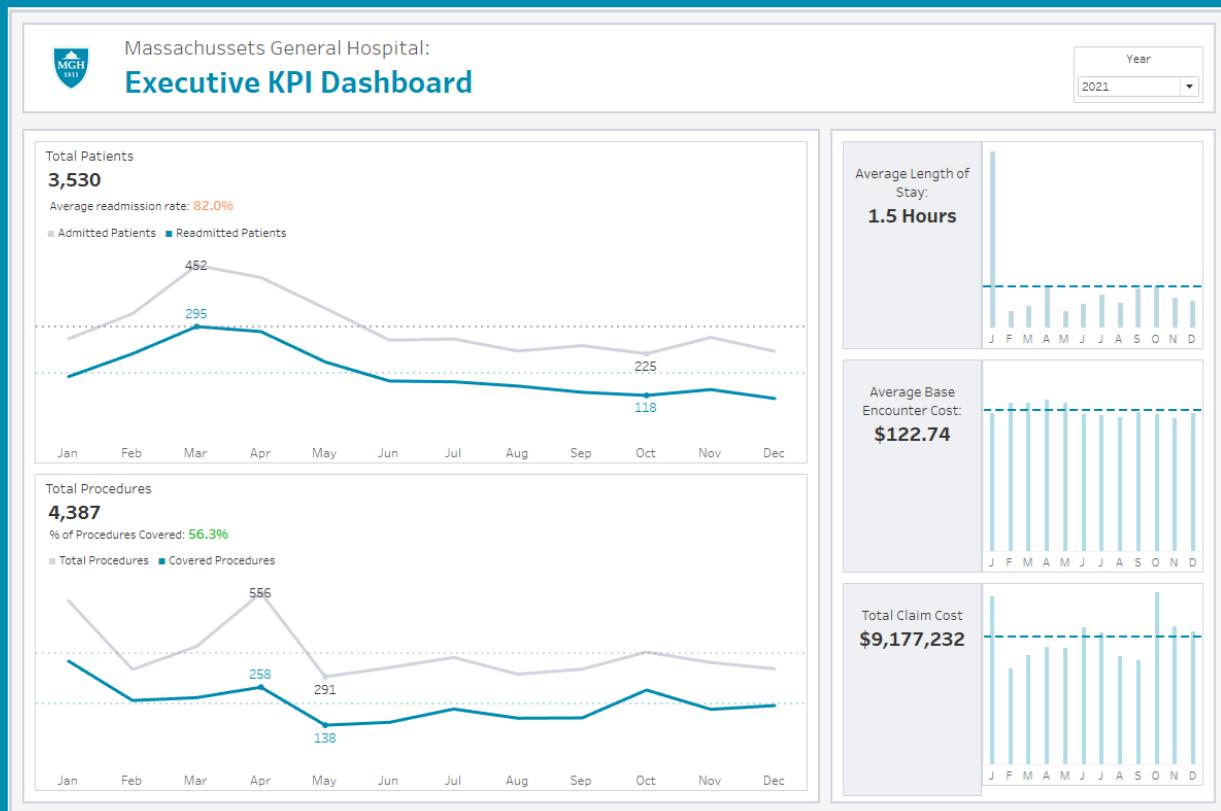
Encounter Class	Number of Encounters
ambulatory	12.5K
outpatient	6.3K
urgentcare	3.7K
emergency	2.3K
wellness	1.9K
inpatient	1.1K

Ambulatory encounters were the most frequent, totaling **12,537**, with an average duration of **9.57 hours** per encounter. **Outpatient** encounters followed, with **6,300** encounters and an average duration of **5.68 hours**. **Inpatient** encounters, while the least frequent at **1,135**, had the longest average duration of **36.84 hours**.

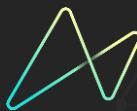
Misha Riaz



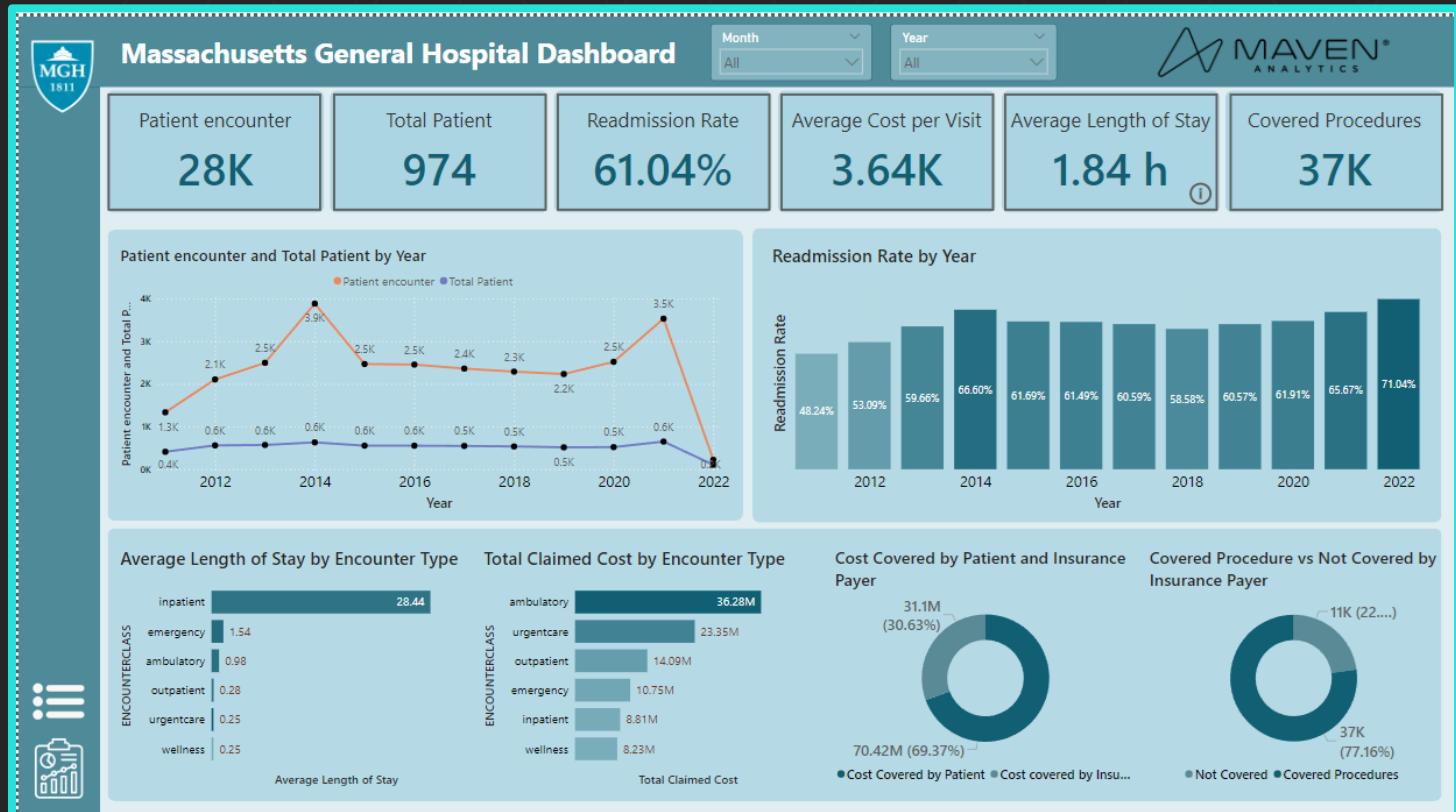
MAVEN HOSPITAL CHALLENGE



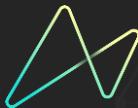
Lucas Assis



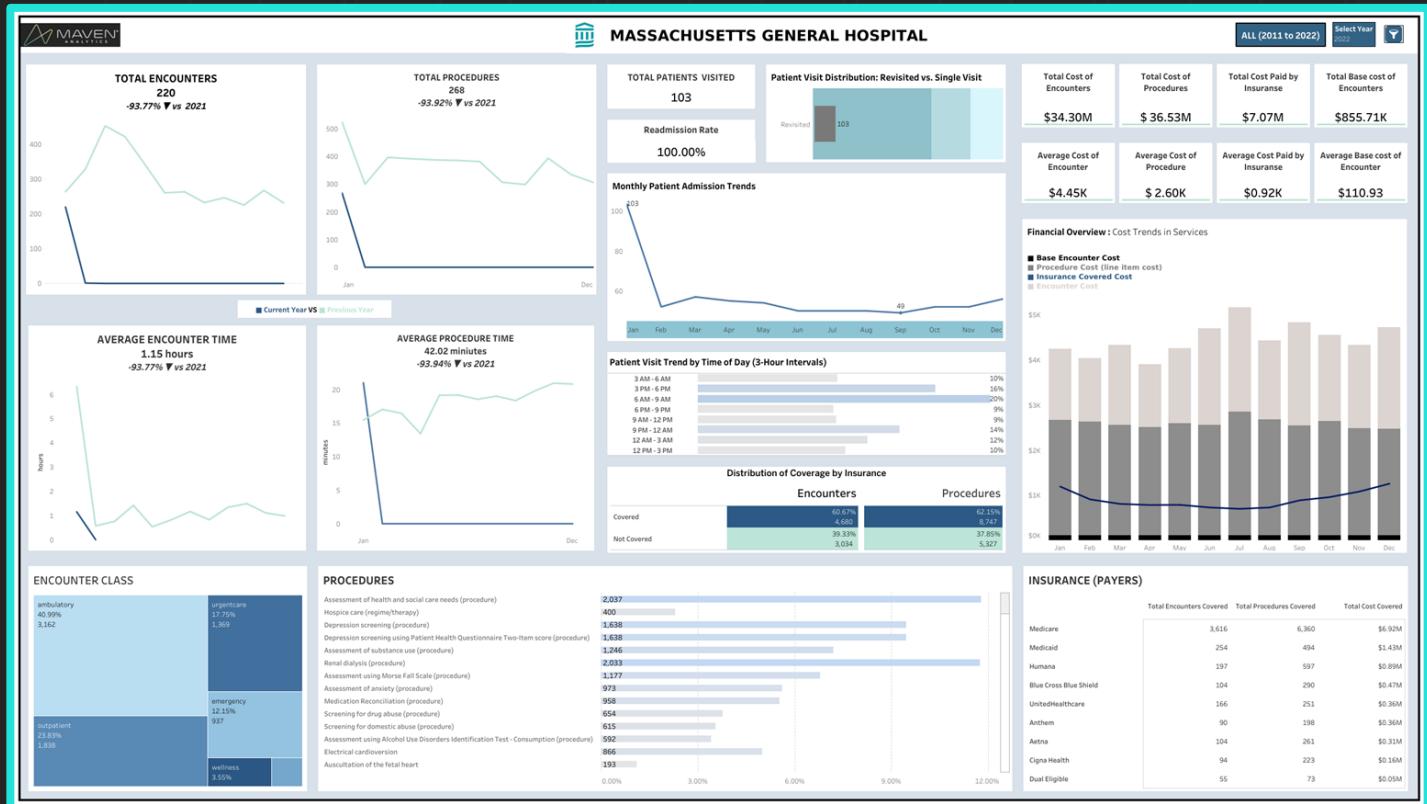
MAVEN HOSPITAL CHALLENGE



Ashutosh Jaiswal



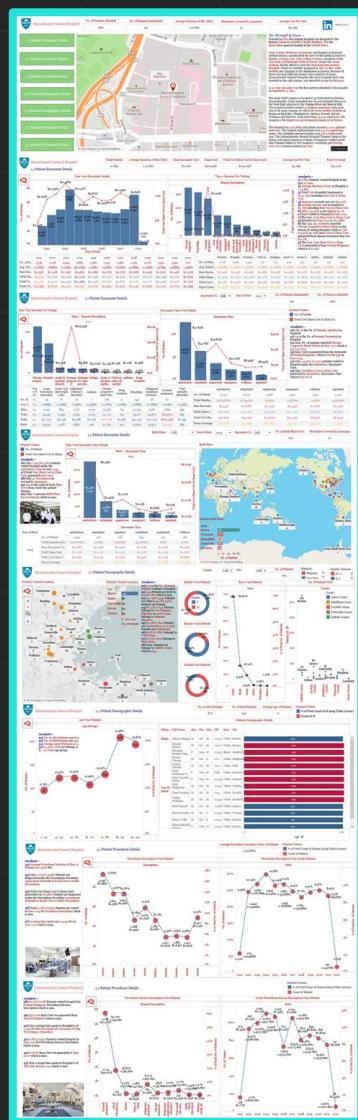
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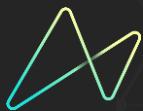
Santanu Jha



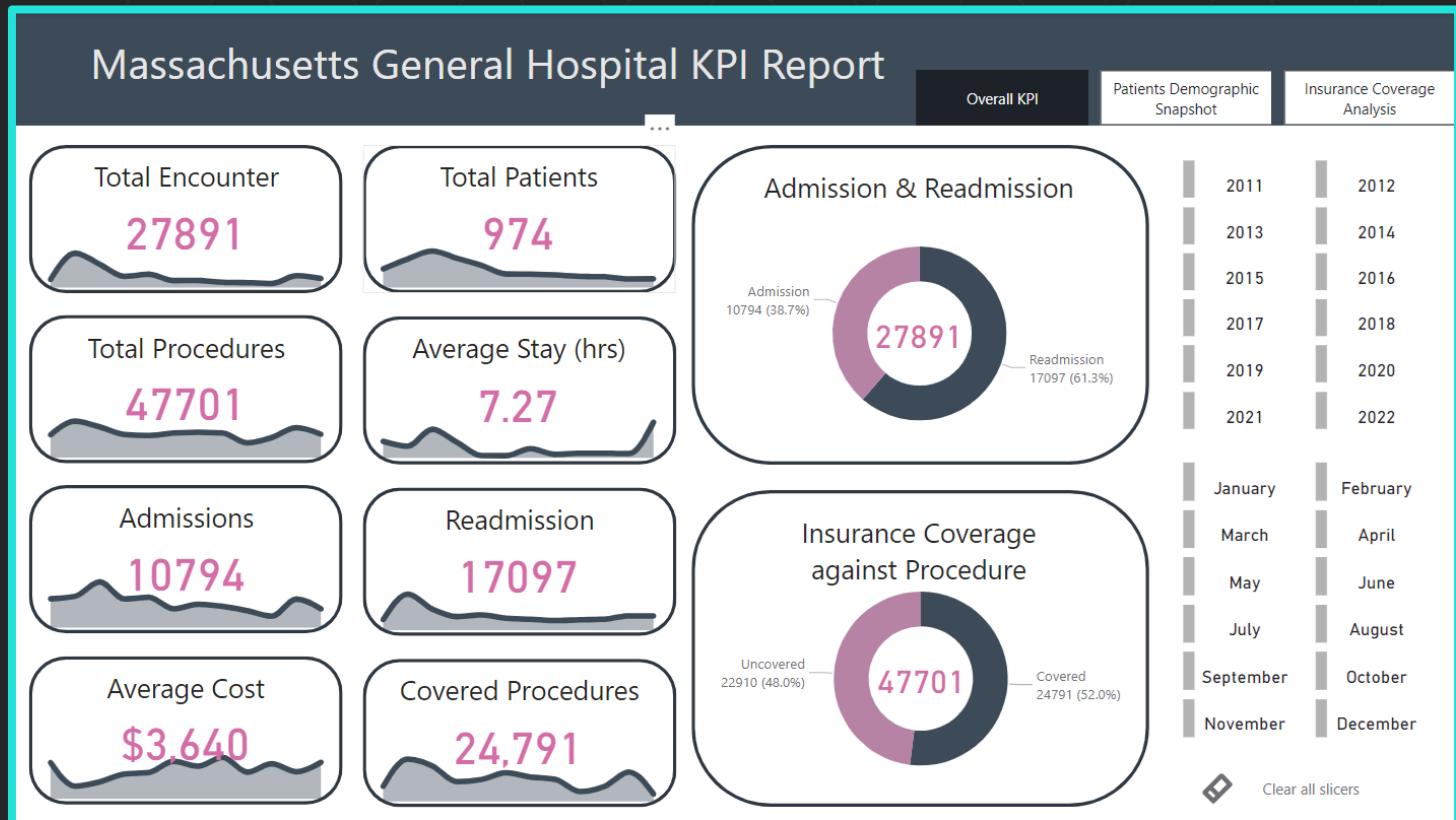
MAVEN HOSPITAL CHALLENGE



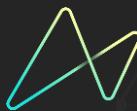
Lalit Mohan Pant



MAVEN HOSPITAL CHALLENGE



Takami Ryuto-Smith



MAVEN HOSPITAL CHALLENGE

Examining Readmission Rates: Historical Trends

Admissions Length-of-stay Cost-per-visit Coverage

Patients Admitted
27,891

Patients Readmitted
26,904

Readmission Rate
96.46%

Unique Admitted Patients
974

Unique Patients Readmitted
854

Admission vs Readmissions Readmission Rate 96.5%

Highest Rate -> 2014 - Feb (Admissions) and 2014 - Feb (Readmissions)

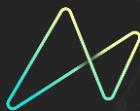
Reason for Admission

Reason for Admission	Admitted Patients	Readmitted Patients	Readmission Rate	Procedure Rate
Unknown	19,541	18,915	97%	78%
Chronic congestive heart failure (disorder)	1,738	1,729	99%	82%
Hyperlipidemia	1,565	1,469	94%	
Normal pregnancy	1,341	1,312	98%	97%
Malignant neoplasm of breast (disorder)	723	706	98%	88%
Viral sinusitis (disorder)	732	684	93%	
Acute viral pharyngitis (disorder)	400	364	91%	18%
Acute bronchitis (disorder)	352	307	87%	77%
Alzheimer's disease (disorder)	191	172	90%	
Sinusitis (disorder)	115	110	96%	
Total	27,891	26,904	96%	81%

Top 5 Readmissions Patients Readmitted

Mrs. Kimberly627 Collier206 (1380)
Mrs. Shan239 Parisian75 (886)
Mr. Mariano761 O'Kear634 (870)
Mr. Galt741 Glover...
Mr. Ward688 Nicoll...

Balamurugan Sivasangar



MAVEN HOSPITAL CHALLENGE

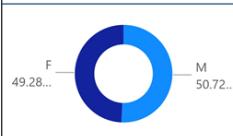
Maven Hospital Dashboard

The average length of stay at Maven Hospital from 2011 to 2022 was 7.25 hours, with a decreasing trend. 50.72% were males while 49.28% were females. White is the most common race, Medicare as the main payer, and a notable increase in claim costs in 2022.

Average Base Cost per Patient Encounter

\$116.2

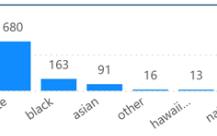
Gender Distribution of Patients



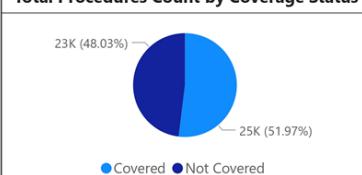
Total Encounter Cost

\$101.5M

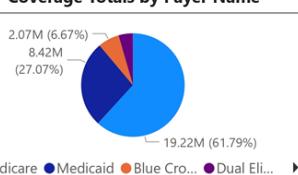
Number of Patients by Race



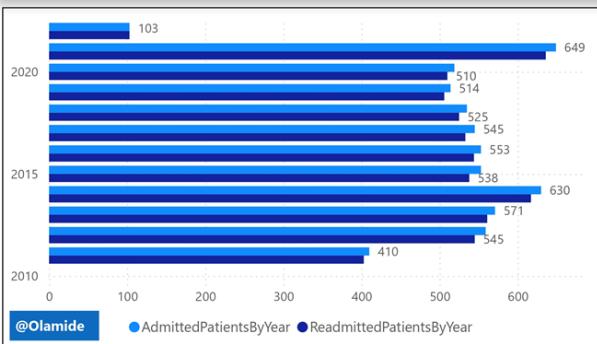
Total Procedures Count by Coverage Status



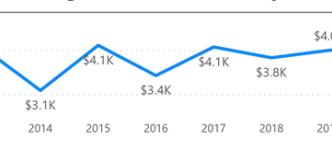
Coverage Totals by Payer Name



Admitted and Readmitted Patients by Year



Average Total Claim Costs by Year



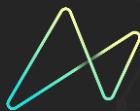
Average Length of Stay (Hours) Over the Years



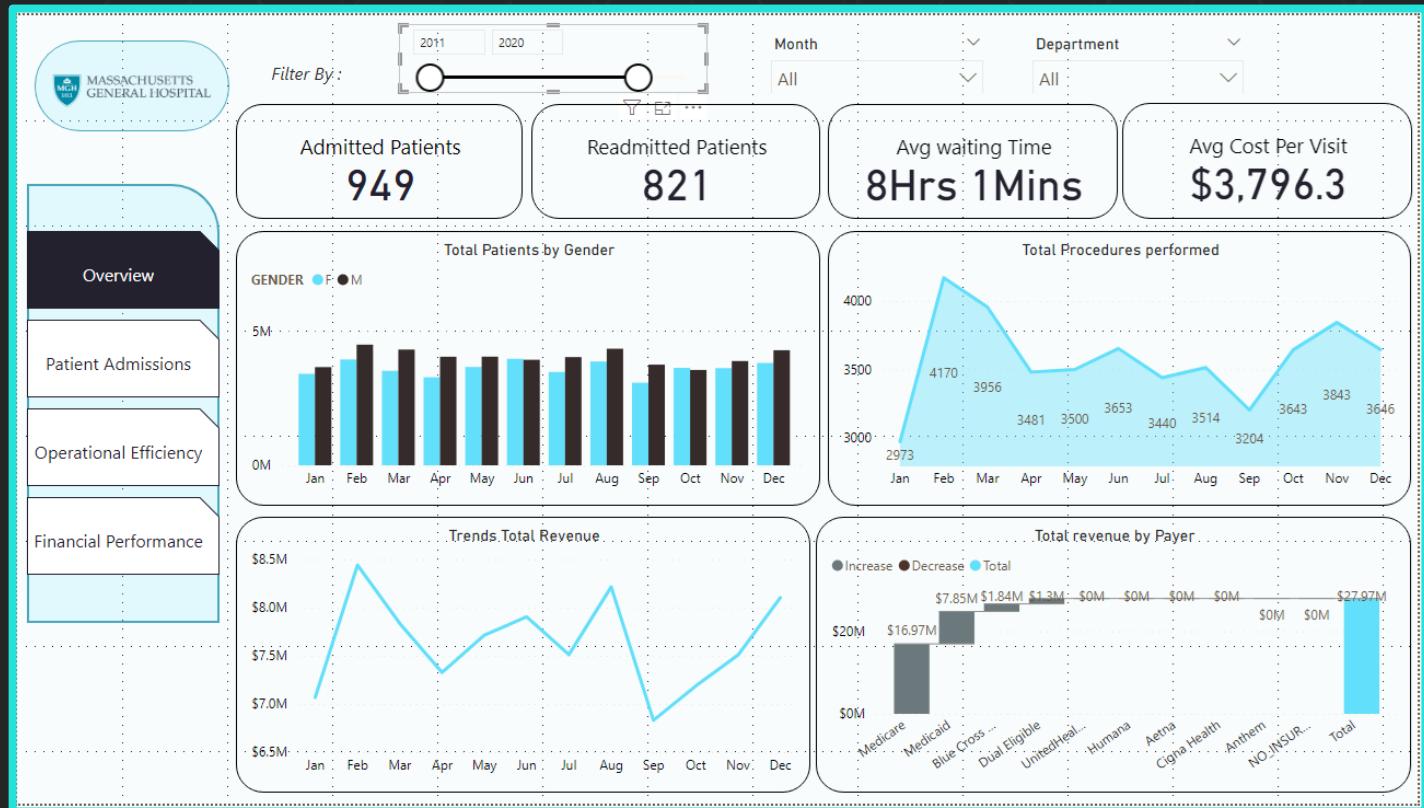
Overall Average

7.25

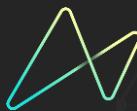
Olamide Oseni



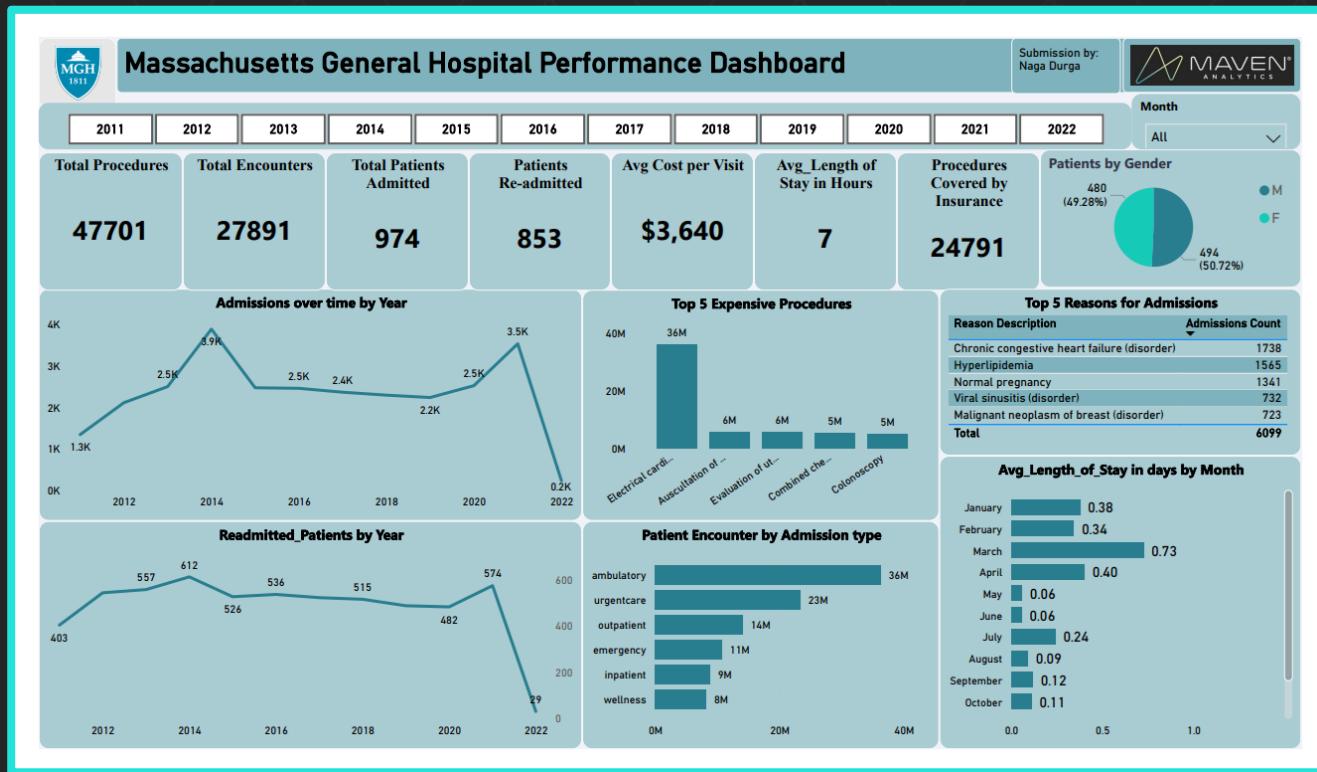
MAVEN HOSPITAL CHALLENGE



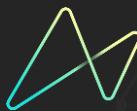
Alfred Thomas



MAVEN HOSPITAL CHALLENGE



Naga Durga Pantagolusula



MAVEN HOSPITAL CHALLENGE

Massachusetts Hospital Clear Filters

27891
Admissions

974
Patients

154
Death Count

69.37% | 30.63%
Amount Paid by Patient vs Covered by Insurance

6572
Procedures Covered By Insurance

13.78%

Admissions by Age Groups

Age Group	Admissions
0.0K	1.2K
11-20	21-30
31-40	2.1K
41-50	2.3K
51-60	2.3K
61-70	2.6K
70+	3.4K
71-80	3.9K
81-90	10.0K

Death Count by Age Groups

Age Group	Death Count
21-30	2
31-40	4
41-50	5
51-60	7
61-70	14
71-80	17
81-90	85
90+	22

RACE

Race	Count
White	680
Black	163
Asian	91
Other	16
Hawaiian	13
Native	11

Geographic Distribution of Patients

Procedures

Procedure	Admissions	Base Cost	Duration (mins)
Assessment of health and social care needs (procedure)	4596	\$431.00	44.75
Depression screening (procedure)	3614	\$431.00	12.49
Depression screening using Patient Health Questionnaire Two-Item score (procedure)	3614	\$431.00	24.99
Assessment of substance use (procedure)	2906	\$431.00	12.52
Renal dialysis (procedure)	2746	\$1,004.09	178.87
Assessment using Morse Fall Scale (procedure)	2422	\$431.00	22.60
Assessment of anxiety (procedure)	2288	\$431.00	22.52
Medication Reconciliation (procedure)	2284	\$509.12	14.94
Screening for drug abuse (procedure)	1484	\$431.00	25.00
Screening for domestic abuse (procedure)	1432	\$431.00	34.92
Assessment using Alcohol Use Disorders Identification Test -	1422	\$431.00	25.03

Insurance Payer

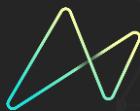
Insurance Payer	Patients	Admissions	Coverage	% Covered
Medicare	449	11371	\$19,215,691.37	77.96%
NO INSURANCE	262	8807	\$0.00	0.00%
Humana	219	1084	\$1,953.86	0.06%
Blue Cross Blue Shield	216	925	\$2,074,496.34	69.10%
Aetna	207	936	\$1,780.16	0.07%
UnitedHealthcare	206	900	\$3,937.32	0.15%
Anthem	204	704	\$0.00	0.00%
Gigna Health	203	809	\$968.35	0.04%
Medicaid	113	1443	\$8,417,973.72	94.01%
PPO Flexible	67	817	\$1,300,700.07	69.76%

Demographic Breakdown

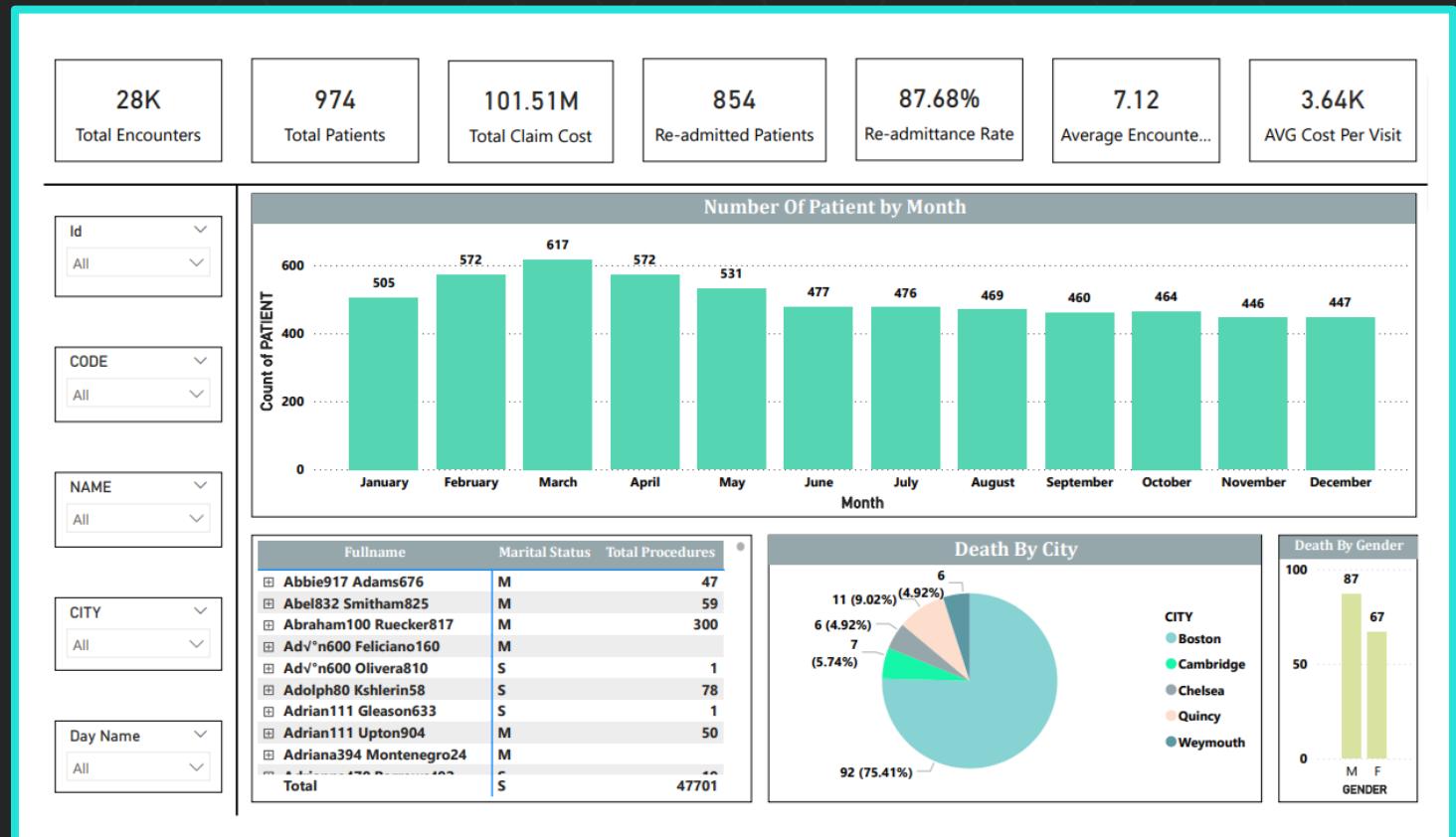
Demographic	Count	Percentage
Nonhispanic	783	(80.4%)
Hispanic	191	(19.6%)

Marital Status	Count	Percentage
Married	784	(80.6%)
Single	189	(19.4%)

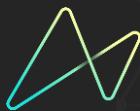
Jainish Porwal



MAVEN HOSPITAL CHALLENGE



Manav Raju



MAVEN HOSPITAL CHALLENGE



MASSACHUSETTS
GENERAL HOSPITAL

Ahsan Iqbal
for Maven Hospital Challenge

Hospital Overview and KPIs

Patient and Procedure Analysis

Financial Analysis and Insights

70.42M

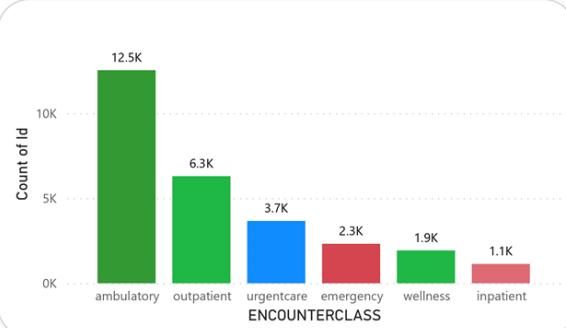
Total Cost Not Covered b...

3.64K

Average Cost per Visit

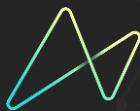
974

Total Number of Patients



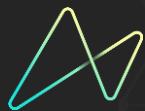
Year	Month	Admissions by Encounter Class	Sum of TOTAL_CLAIM_COST
2011	January	85	258,887.02
2011	February	84	294,226.27
2011	March	131	305,796.68
2011	April	112	403,600.36
2011	May	133	433,712.10
2011	June	131	417,896.96
2011	July	124	432,557.26
2011	August	113	345,545.98
2011	September	126	332,894.17
2011	October	84	357,506.27
2011	November	100	403,491.63
2011	December	112	419,736.48
2012	January	116	571,812.04
2012	February	170	896,797.42
2012	March	184	774,524.96
Total		27,891	101,514,375.52

Ahsan Iqbal



MAVEN HOSPITAL CHALLENGE





MAVEN HOSPITAL CHALLENGE

HOSPITAL REVIEW REPORT

Report by Jwala Varghese

974 Unique Patients Visisted **157** No. of Procedures **10** Types of Insurance **116.18** Avg. Base Encounter Cost **154** Death Count

DEMOGRAPHIC **TIME TREND** (selected) **GEOGRAPHIC** **AGE GROUP** **STAY DURATION** **Click to Clear all Filters** **i**

Age Group: All **Year**: All **Stay Duration Group**: All **Encounter Class**: All

Patients by Gender (Click on Gender to breakdown data to status):

Female 480 (49.28%) Male 494 (50.72%)

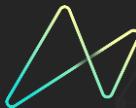
Patients by Ethnicity:

hispanic 191 (19.61%) nonhispanic 783 (80.39%)

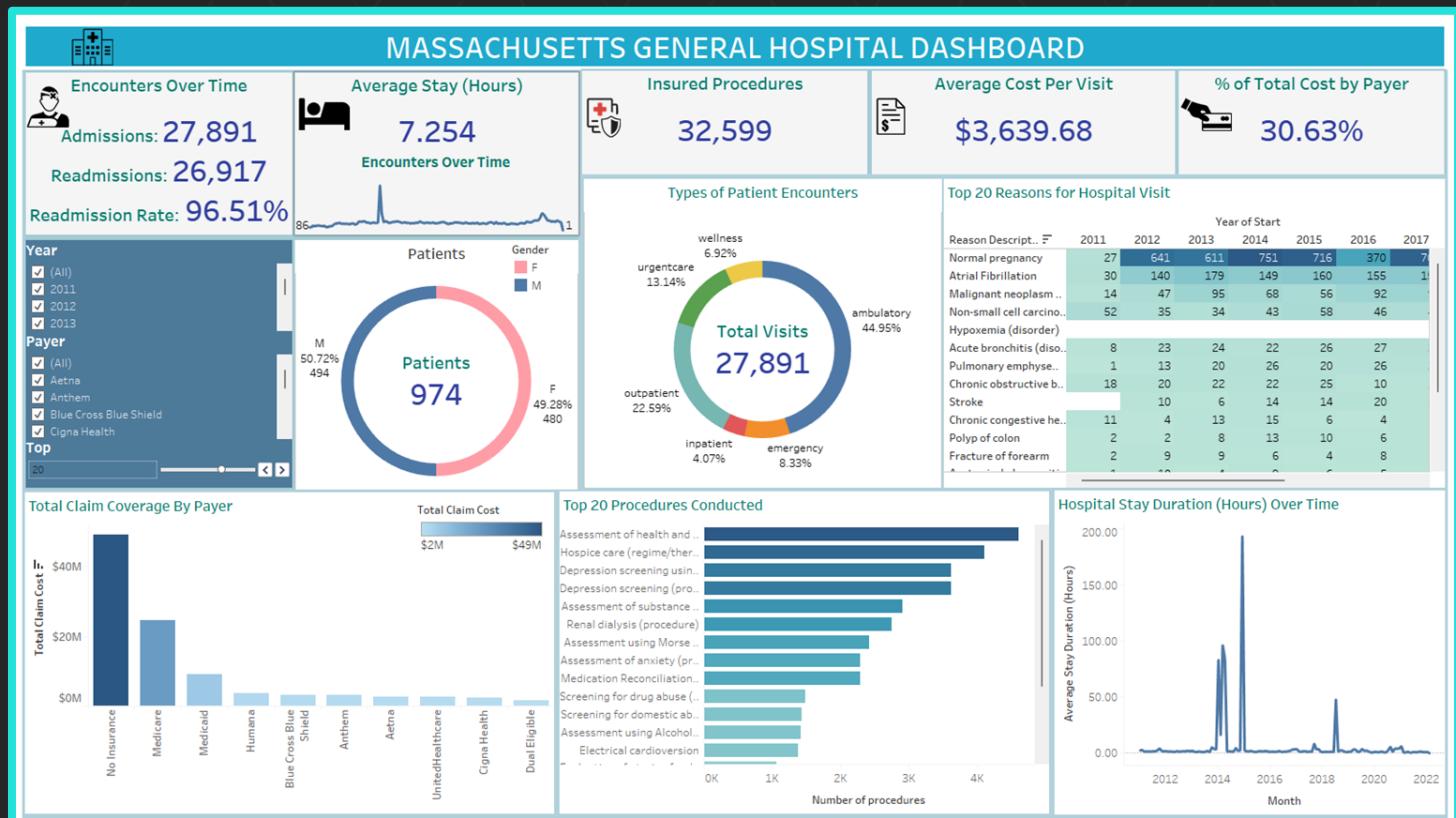
Patients by Race:

white 680.00 black 163.00 asian 91.00 other 16.00 hawaiian 13.00 native 11.00

Jwala Varghese



MAVEN HOSPITAL CHALLENGE



Shawn Best



MAVEN HOSPITAL CHALLENGE



KPI Dashboard



OVERVIEW

PROCEDURE SUMMARY

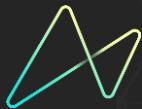
FINANCIAL SUMMARY

PROCEDURE & ENCOUNTER
TIMELINES

GENDER SUMMARY



Balaji Gopalsamy



MAVEN HOSPITAL CHALLENGE

Executive Summary on Massachusetts General Hospital (2011-2022)

974

Total Patients

27.891

Total No. of Visits

29

Avg. Visits Per Patient

974

No. of Readmissions

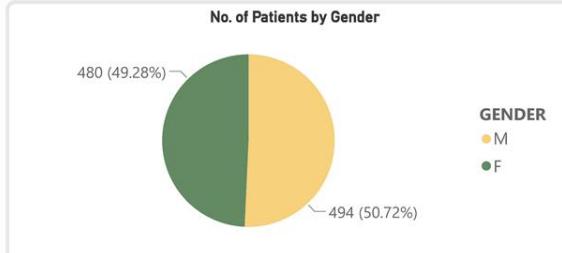
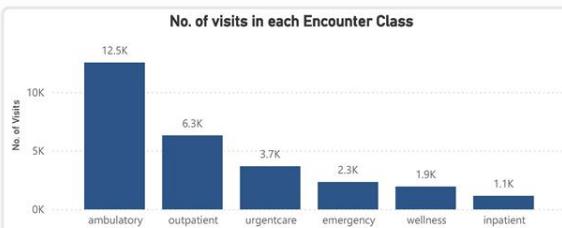
\$3,640

Average cost per visit

Overview

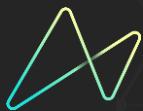
Admission Vs. Readmission

Costing and Procedures



Medical Procedures and Assessments Word Cloud

Rana Kashif



MAVEN HOSPITAL CHALLENGE



How many patients have been admitted or readmitted over time?

21 %

#Patient Readmitted rate

How long are patients staying in the hospital, on average?

7.3

Average duration (hours)

How much is the average cost per visit?

\$3,640

Average cost per visit

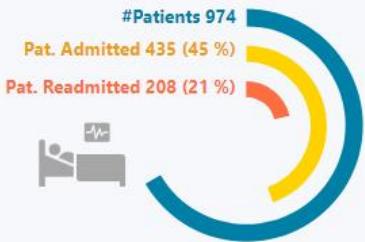
How many procedures are covered by insurance?

60 %

Procedure covered by insurance

Wrap-up...

On the **974 total patients** of the hospital, **435 were admitted** and **208 were readmitted**

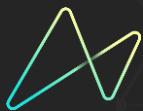


Which evolution over time?

By single patient



Patrice Fayard



MAVEN HOSPITAL CHALLENGE



MASSACHUSETTS
GENERAL HOSPITAL

Year
All

Month
All

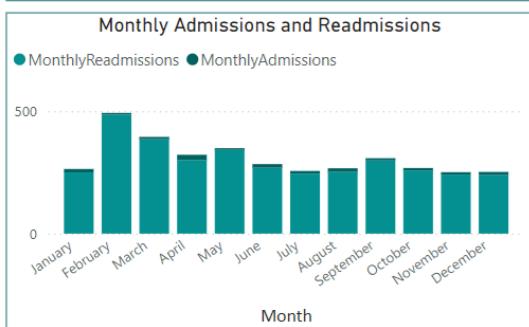
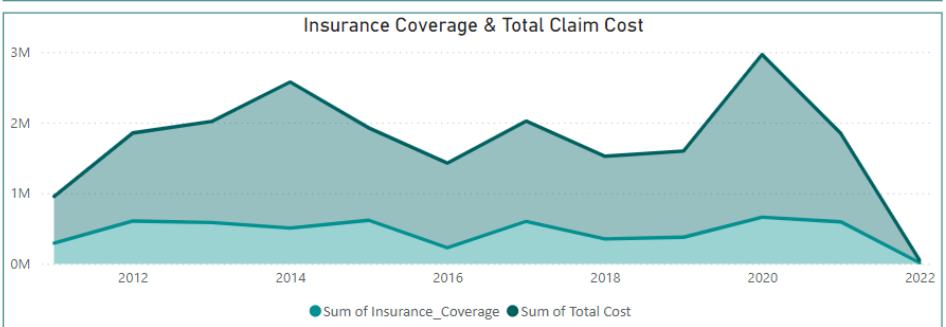
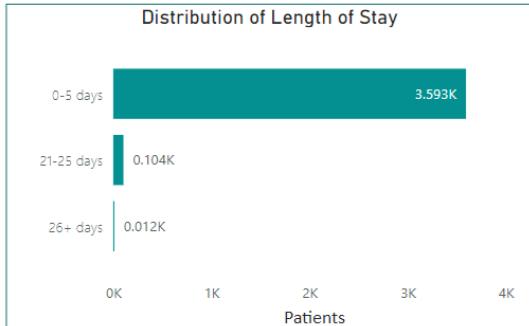
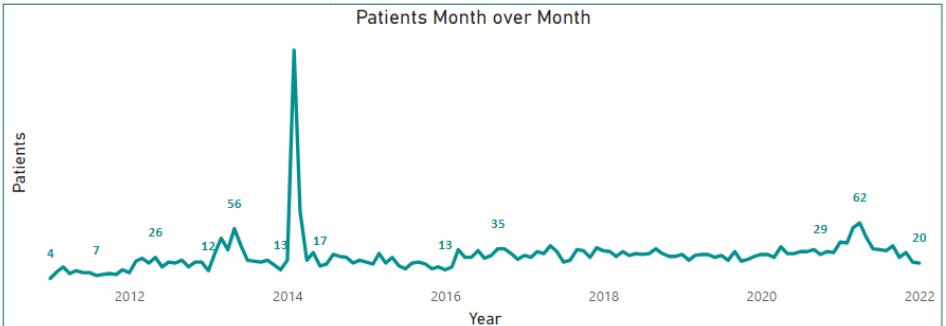
3709
Total Admissions

4.68
Avg Hours of Stay

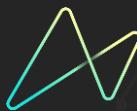
4.13K
Avg Cost per Visit

3567
Total Readmissions

96.17
% of Readmissions



Olympia Tsamoura



MAVEN HOSPITAL CHALLENGE

MASSACHUSETTS GENERAL HOSPITAL | Analysis

27.89K	47.70K	974	£101.5...	£31.10M	846	4.10
Patients Visited	Procedures	Unique Patients	Revenue	Insurance Company Paid	Admitted /Encounters	Average Stays (hr)/Encounter

Patients Visited vs Revenue by Year

Year	Patients Visited	Revenue (£M)
2011	1336	£4.4M
2012	1105	£9.1M
2013	1293	£10.1M
2014	1883	£12.0M
2015	1469	£10.1M
2016	2451	£8.4M
2017	2360	£8.7M
2018	2393	£8.9M
2019	2518	£10.3M
2020	3530	£9.2M
2021	2228	£0.7M
2022	20	£0.7M

Monthly Trends of Patients Visit to Hospital

Month	Patients Visited
January	2217
February	3028
March	2687
April	2312
May	2374
June	2181
July	2182
August	2129
September	2113
October	2087
November	2333
December	2246

Summary by Encounter Class

ENCOUNTERCLASS	Patients Visited	BASE_ENCOUNTER_COST	TOTAL_CLAIM_COST	PAYER_COVERAGE	Average COST
ambulatory	12535	£1,325,354.33	£36,283,269.74	£12,903,487.84	£2,894.56
emergency	2322	£337,266.57	£10,750,051.53	£3,246,828.27	£4,629.65
inpatient	1135	£129,019.73	£8,809,134.34	£3,688,764.95	£7,761.35
outpatient	6300	£661,750.59	£14,094,967.12	£3,777,758.35	£2,237.30
urgencare	3666	£522,698.28	£23,349,349.96	£3,058,909.73	£6,369.16
wellness	1931	£264,160.80	£8,227,431.73	£4,421,749.94	£4,260.71
Total	27889	£3,240,250.30	£101,514,204.42	£31,097,499.08	£3,639.94

Patients Visited and Revenue / AgeGroup

AgeGroup	Patients Visited	Revenue (£M)
1-20	10	£0.0M
20-30	1341	£14M
30-40	2323	£5M
40-50	2034	£8M
50-60	2356	£5M
60-70	2643	£8M
70+..	17182	£58M

Common Reasons for Visiting Hospital

Reason	Count
Chronic congestive heart failure (disorder)	1738
Hyperlipidemia	1565
Normal pregnancy	1341
Viral sinusitis (disorder)	732
Malignant neoplasm of breast (disorder)	723
Acute viral pharyngitis (disorder)	400
Acute bronchitis (disorder)	352
Alzheimer's disease (disorder)	191
Sinusitis (disorder)	115
Asthma	113

Which Insurance company paid most?

Insurance Company	Paid (£M)
Medicare	£19.22M
Medicaid	£8.42M
Blue Cross Blue Shield	£2.07M
Dual Eligible	£1.38M
UnitedHealthcare	£0.00M

Most visited Patients by Gender

Gender	Count	Percentage
F	12.97K	(46.49%)
M	14.92K	(53.51%)

Year: All

2011	2017
2012	2018
2013	2019
2014	2020
2015	2021
2016	2022

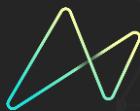
Month: All

January	July
February	August
March	September
April	October
May	November
June	December

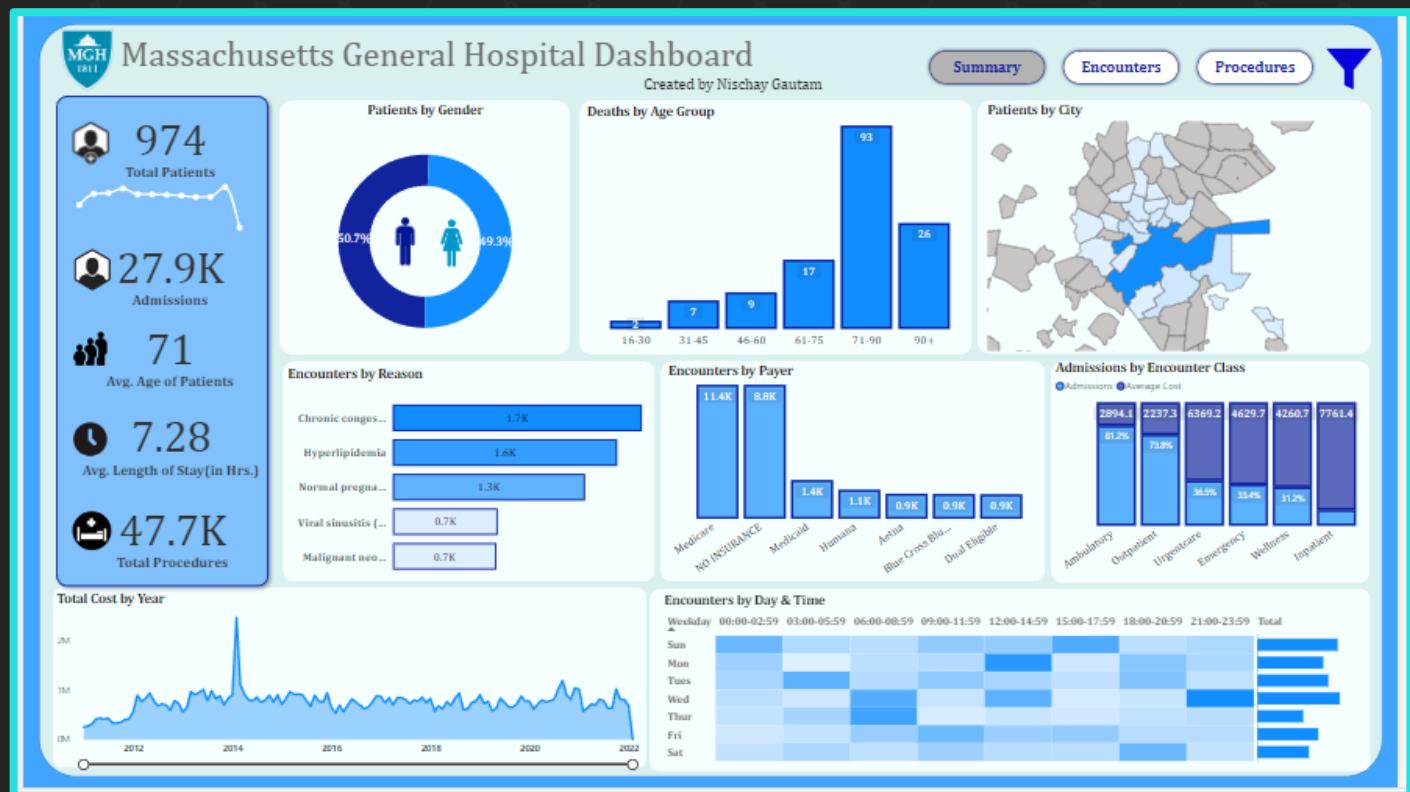
Quarter: All

Qtr 1	Qtr 3
Qtr 2	Qtr 4

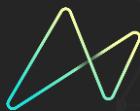
Md. Asif Khan



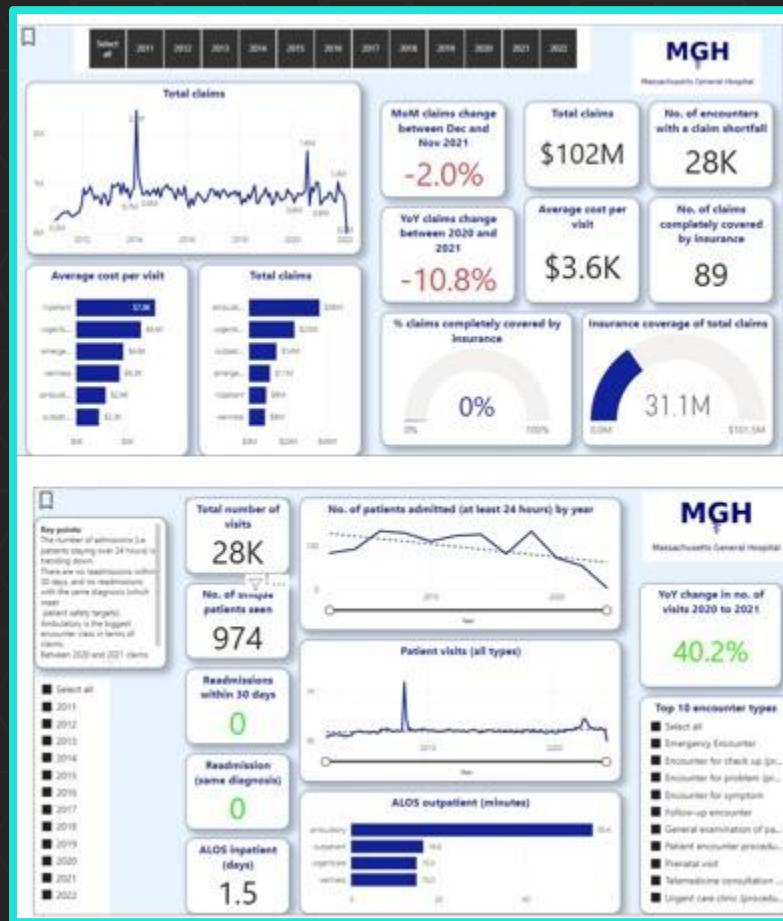
MAVEN HOSPITAL CHALLENGE



Nischay Gautam



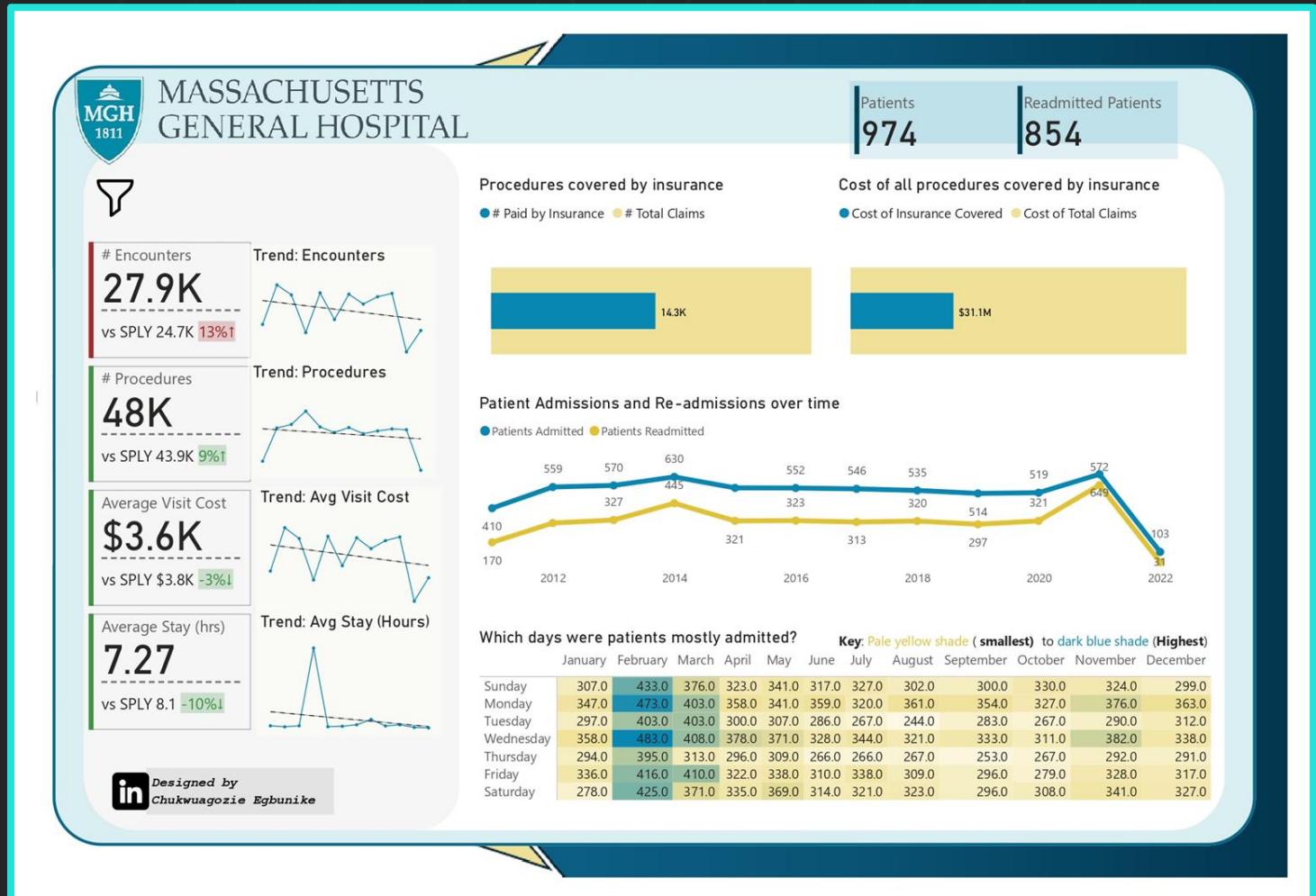
MAVEN HOSPITAL CHALLENGE



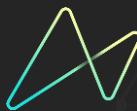
Jenny Gray



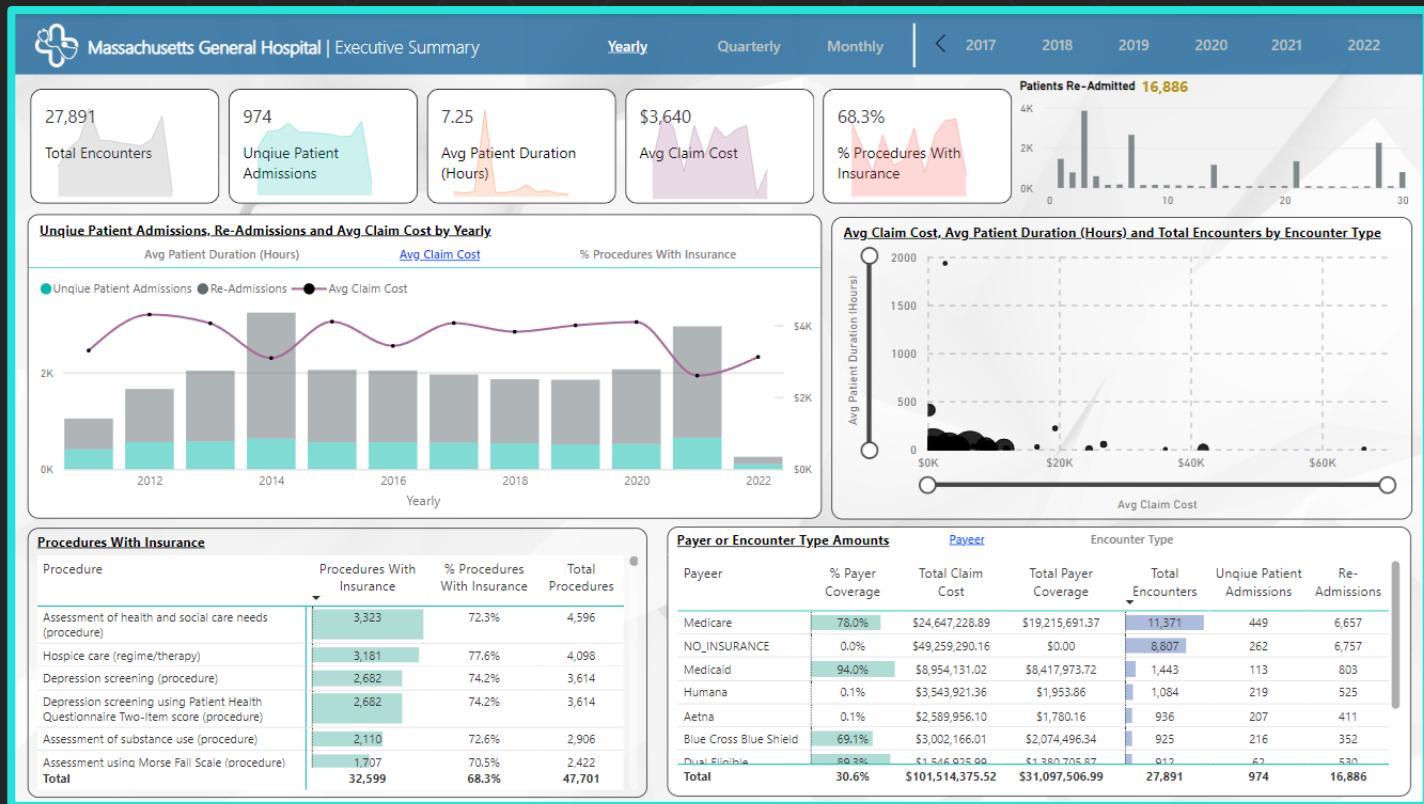
MAVEN HOSPITAL CHALLENGE

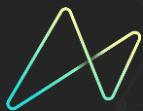


Chukwuagozie Egbunike

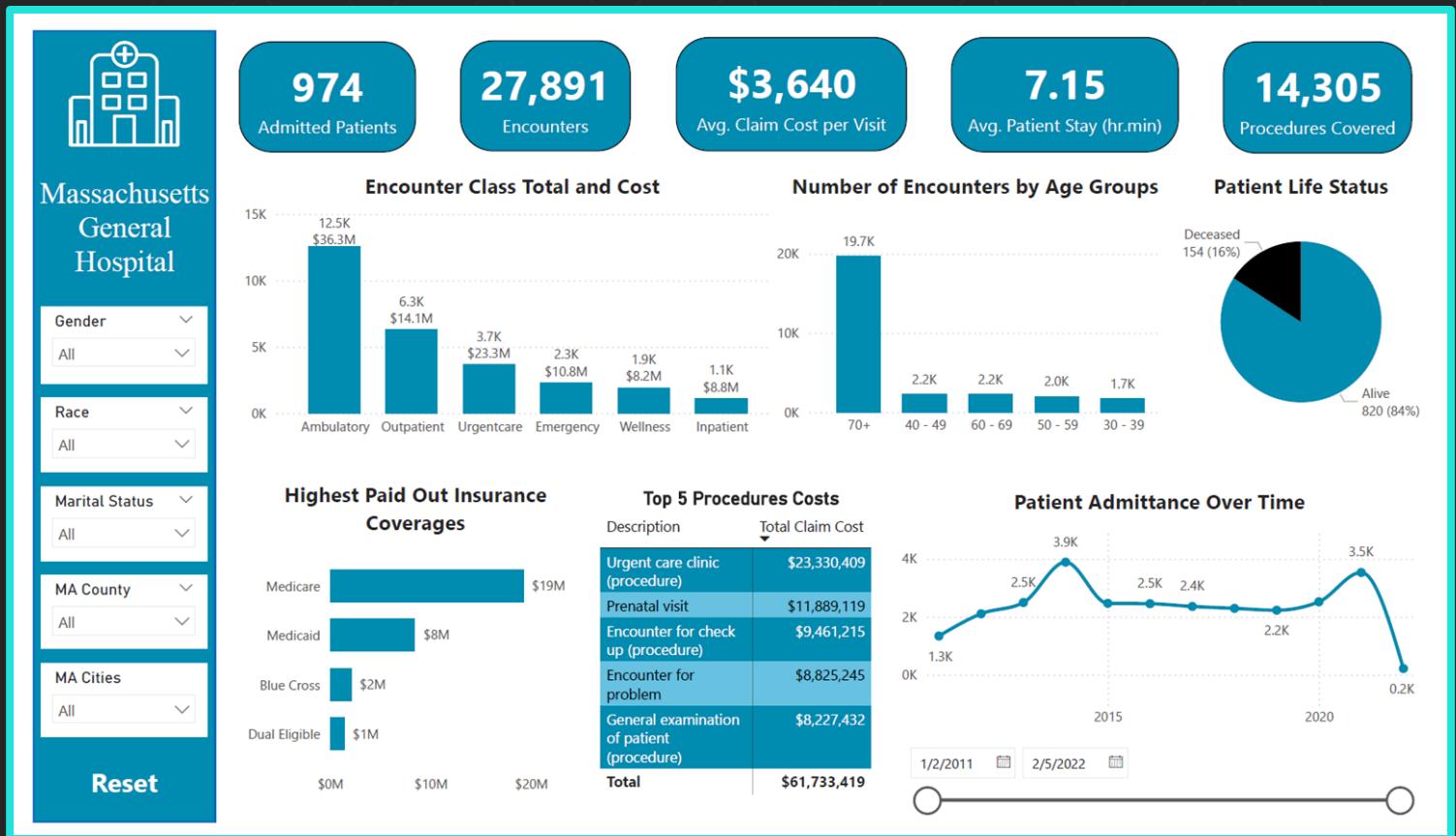


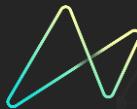
MAVEN HOSPITAL CHALLENGE



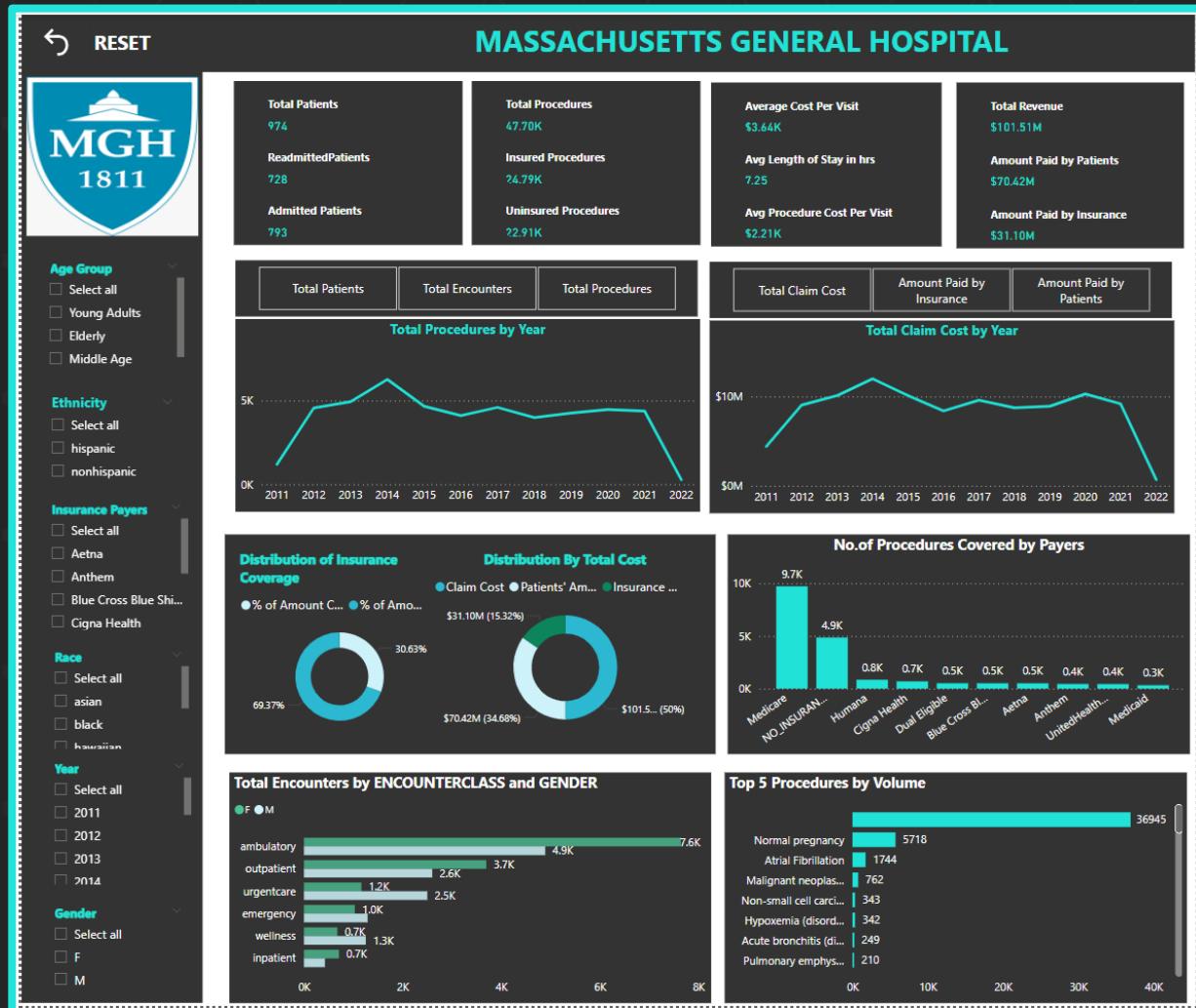


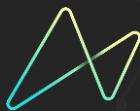
MAVEN HOSPITAL CHALLENGE





MAVEN HOSPITAL CHALLENGE





MAVEN HOSPITAL CHALLENGE

[<< Return](#)



Maven Hospital
Procedure Data

Year

2022

2021

2020

2019

2018

2017

2016

2015

2014

2013

2012

2011

Number of Procedures

268

Number of Procedures Covered
by Insurance

169

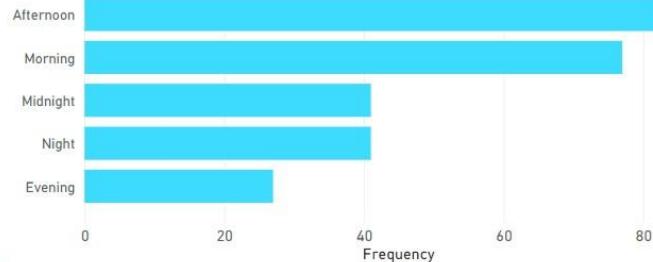
Average Insurance Coverage

35.9%

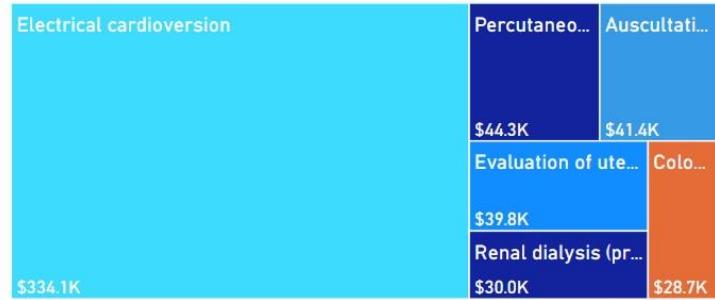
Average Procedure Duration
(Hours)

0.70

Frequency of Procedures by Time of the Day



Types of Procedures by Total Cost



Jin Jye Chong



MAVEN CHALLENGE

Ready to join the Maven Hospital Challenge?

Acting as an Analytics Consultant for Massachusetts General Hospital, your task is to build a high-level KPI dashboard for the hospital's executive team.

SUBMISSION DEADLINE

Sunday, July 21, 2024

11:59pm EDT

#MAVENHOSPITALCHALLENGE

