HealthCare Provider Data Analysis

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AGENDA

- Introduction
- Data Overview
- Data Cleaning
- Business Objectives and Problems
- Data Visualization Using Excel
- Recommendation

Introduction

- The client has provided a dataset that includes the following fields:
- DRG Definition: This tells the information about the diagnosis-related information of the aliment
- Provider Id: Authorized govt. id of the hospital
- Provider Name: Name of the hospital including details such as
- Provider Street Address, Provider City, Provider State, Provider Region and Provider Zip Code,
- Total Discharges: Number of patients discharged by specific hospitals and Cost fields such as Average Covered Charges, Average Total Payments, Average Medicare Payments
- Each record (or row) is a unique combination of ailment & and provider.

Data Overview

- The Hospital Charges dataset has more than 150,000 records of treatment of various ailments in several US hospitals.
- The dataset has a record of 100 ailments
- It has a list of 3000+ healthcare providers (hospitals, medical centres, etc.)
- It has data from 50 states of the USA and approximately 2000 cities across the USA
- It describes the cost of treatment for approximately 7 million patients

DATA CLEANING

Data Cleansing with Power Query (Excel 2016)

- Utilized Power Query as a data cleansing tool.
- Eliminated outliers in the dataset for enhanced accuracy.

Data Cleaning Steps

- Removed duplicate records, blank/empty rows, and null values.
- Ensured correct column data types were defined.
- Handling Negative Discharge Values
- Removed negative values in the discharge field.
- Set the first row of the dataset as the header for improved data organization.

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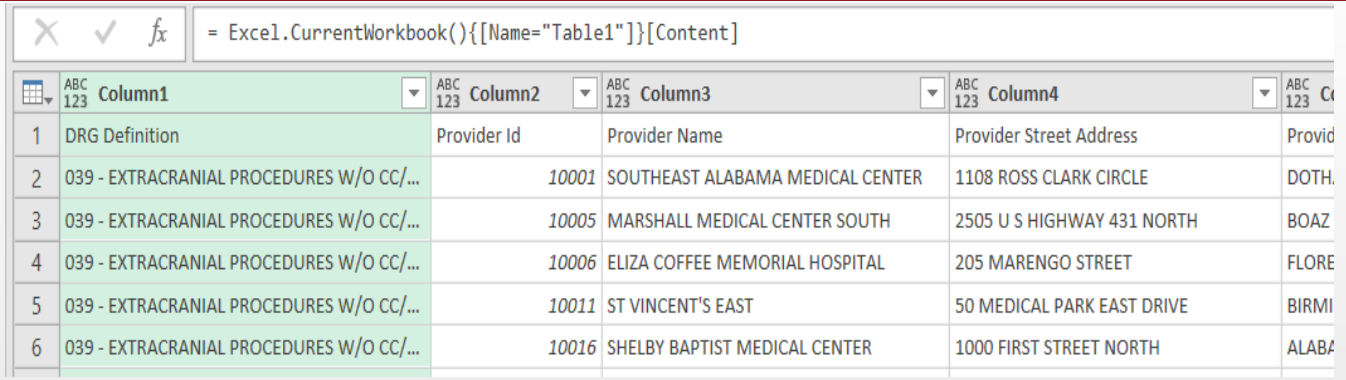

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= Excel.CurrentWorkbook(){[Name="Table1"]}[Content]
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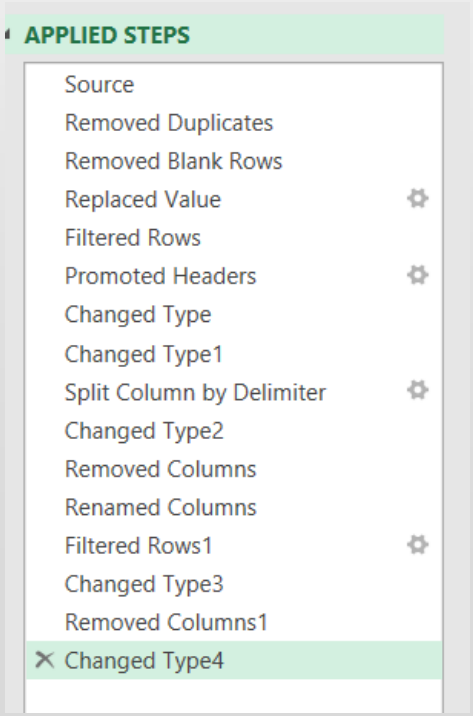
	Column1	Column2	Column3	Column4	Co
1	DRG Definition	Provider Id	Provider Name	Provider Street Address	Provid
2	039 - EXTRACRANIAL PROCEDURES W/O CC/...	10001	SOUTHEAST ALABAMA MEDICAL CENTER	1108 ROSS CLARK CIRCLE	DOTH
3	039 - EXTRACRANIAL PROCEDURES W/O CC/...	10005	MARSHALL MEDICAL CENTER SOUTH	2505 U S HIGHWAY 431 NORTH	BOAZ
4	039 - EXTRACRANIAL PROCEDURES W/O CC/...	10006	ELIZA COFFEE MEMORIAL HOSPITAL	205 MARENGO STREET	FLORE
5	039 - EXTRACRANIAL PROCEDURES W/O CC/...	10011	ST VINCENT'S EAST	50 MEDICAL PARK EAST DRIVE	BIRMI
6	039 - EXTRACRANIAL PROCEDURES W/O CC/...	10016	SHELBY BAPTIST MEDICAL CENTER	1000 FIRST STREET NORTH	ALABA



APPLIED STEPS

- Source
- Removed Duplicates
- Removed Blank Rows
- Replaced Value
- Filtered Rows
- Promoted Headers
- Changed Type
- Changed Type1
- Split Column by Delimiter
- Changed Type2
- Removed Columns
- Renamed Columns
- Filtered Rows1
- Changed Type3
- Removed Columns1
- Changed Type4

Insights

State – Top Diagnosis and Covered Cost

Objective | Analysis

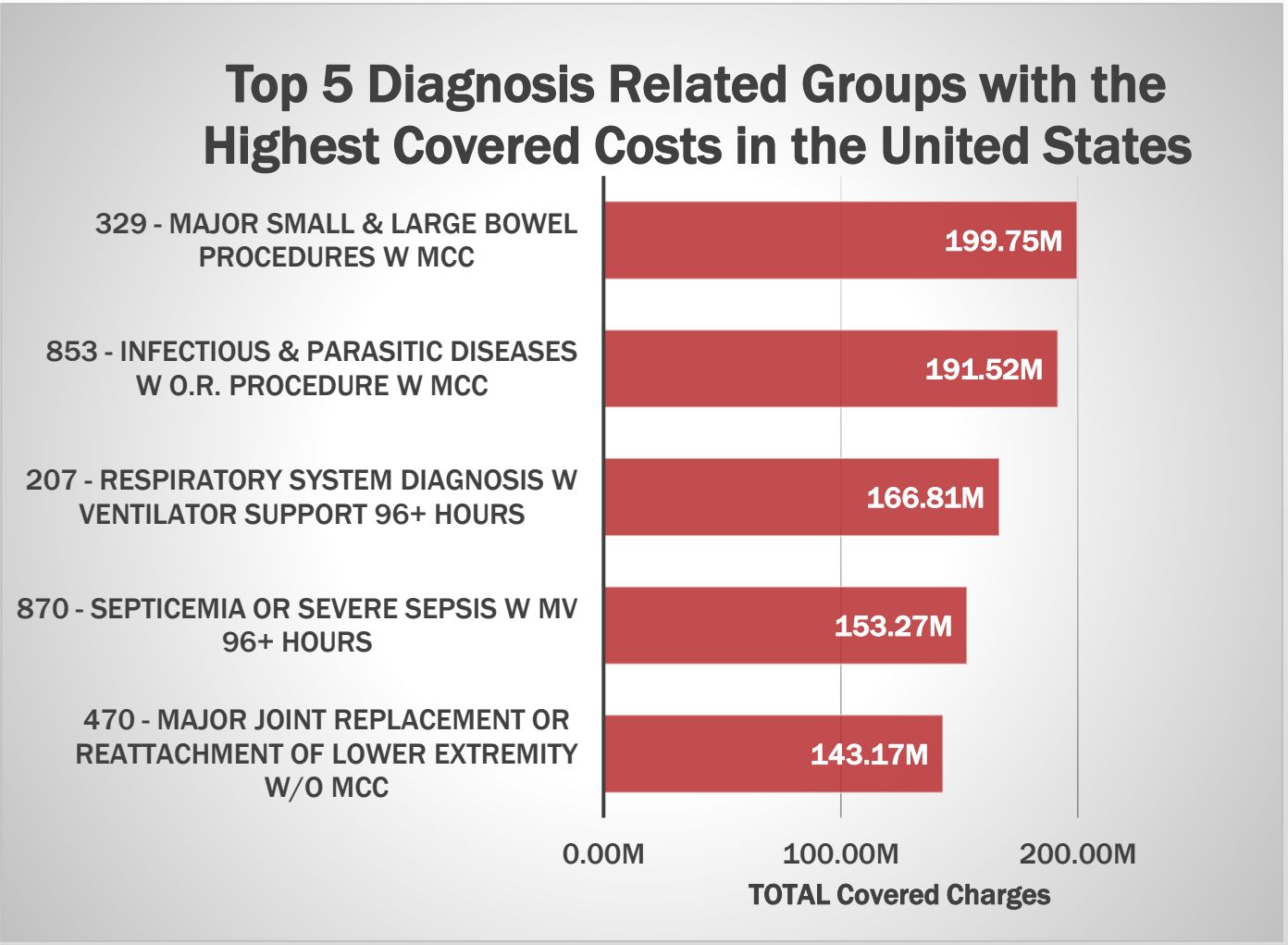
City – Number of Health Providers and Discharges

Objective | Analysis

Region Medicare Payment

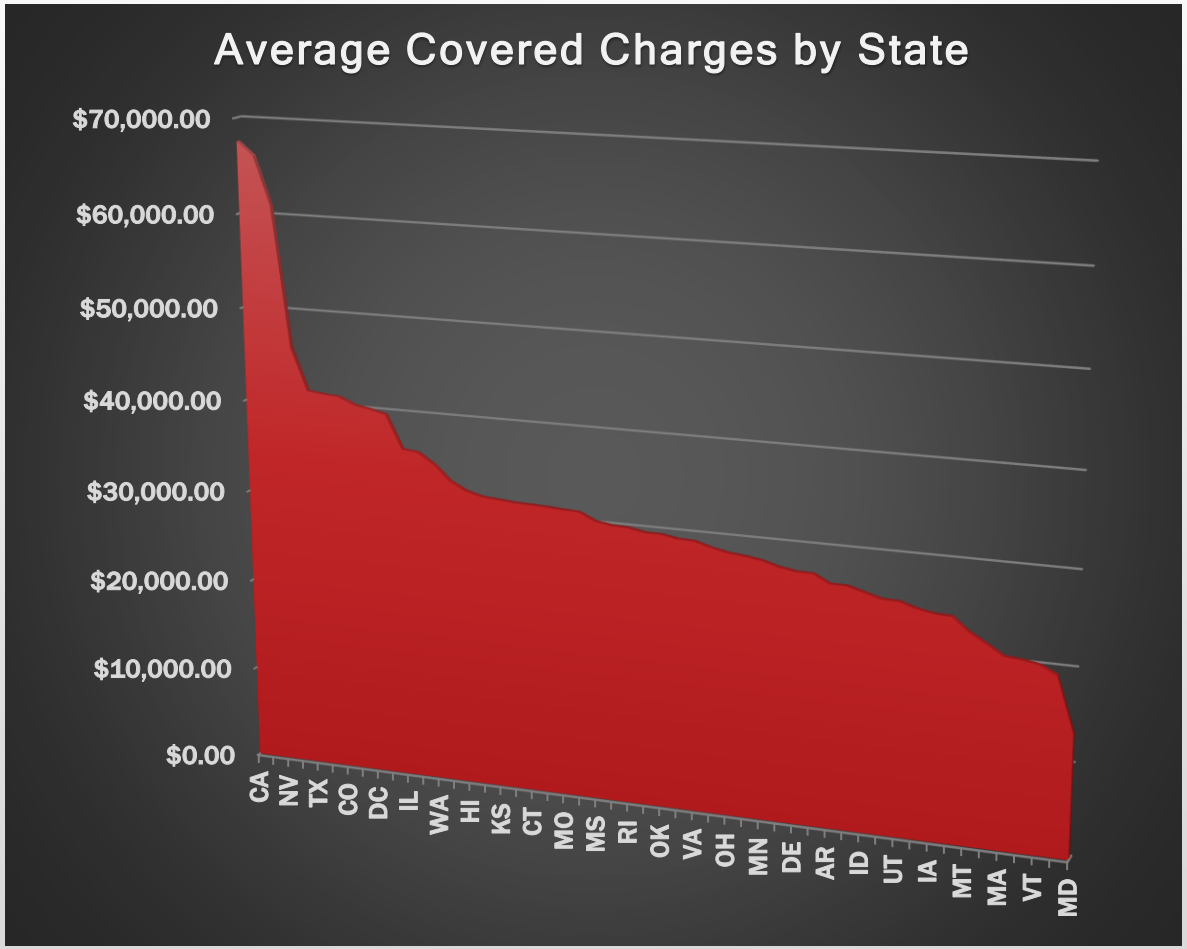
Objective | Analysis

BUSINESS OBJECTIVE 1: Relationship between DRG Definition and Costs



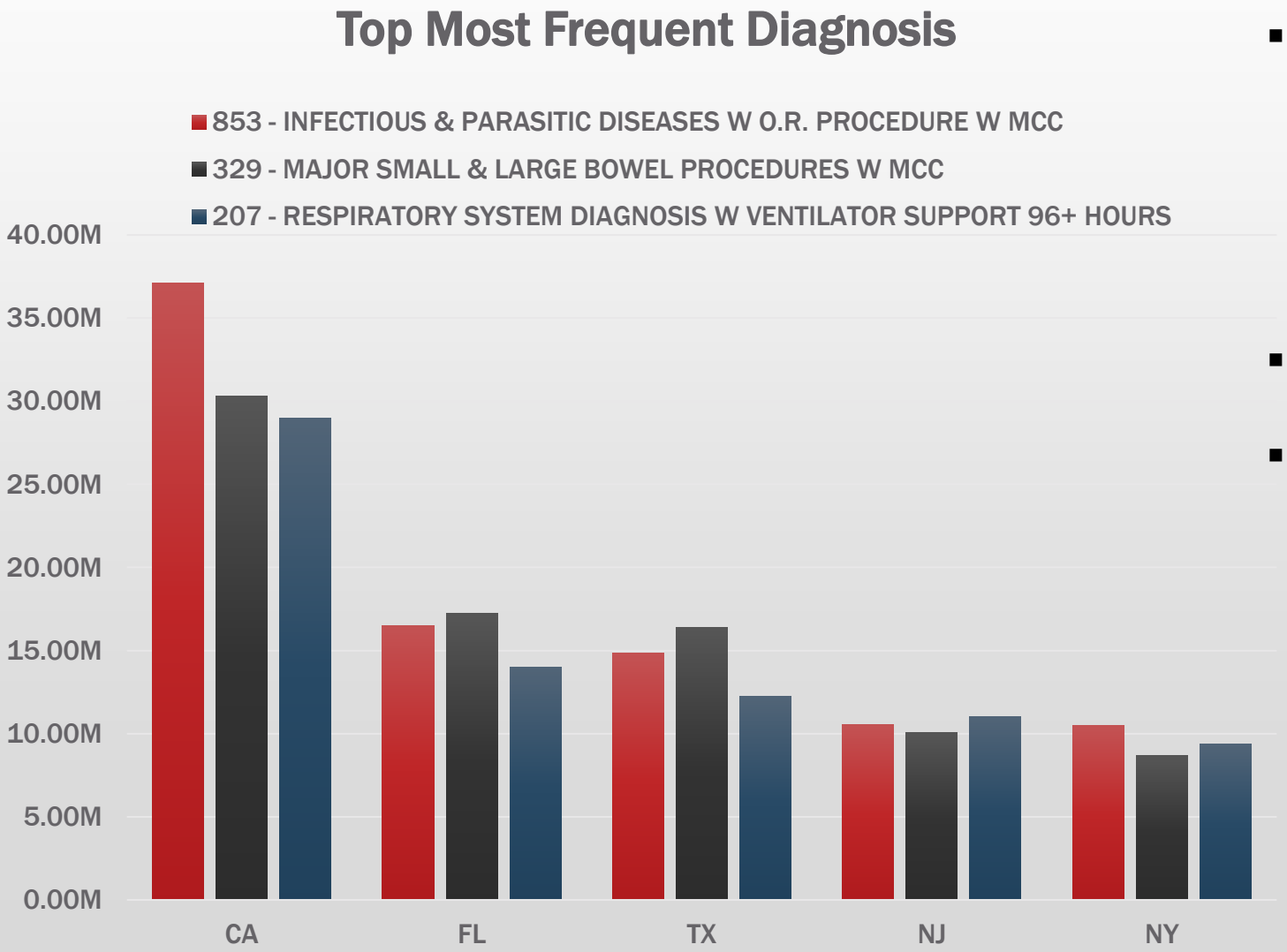
- ✓ The most expensive medical procedure in the data is "329 MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC," costing $199.75 M.
- ✓ The data includes the top three diagnoses related to respiratory, infections and specific procedures with or without complications.
- ✓ Patients can easily compare the prices of these diagnoses across different states to make informed healthcare decisions.

STATE ANALYSIS
OBJECTIVE: Relationship b/w Average Covered charges vs States



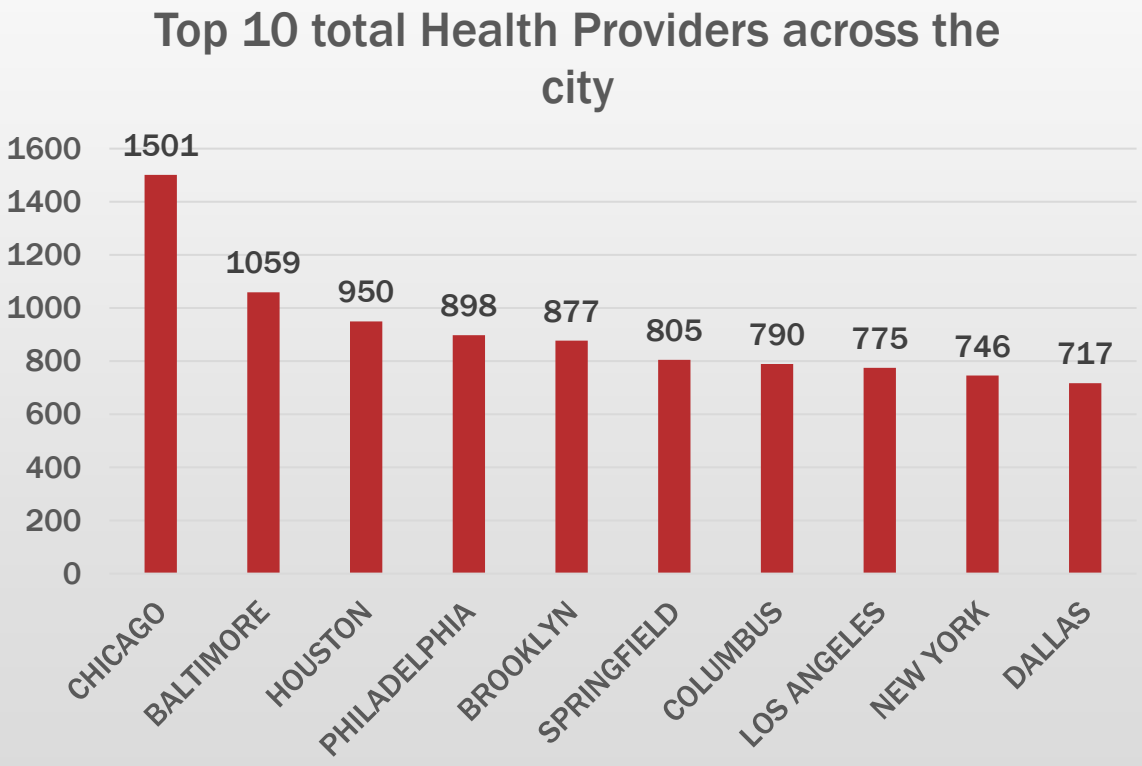
- California has the highest number of medical diagnoses.
- Vermont's Low Average Cost This indicates that medical expenses for patients were comparatively lower.
- The most common diagnoses are expensive, costing millions.
- Government agencies should prioritize improving healthcare affordability and quality for these diagnoses to enhance overall public health.

BUSINESS OBJECTIVE 1: Relationship between DRG Definition and Costs

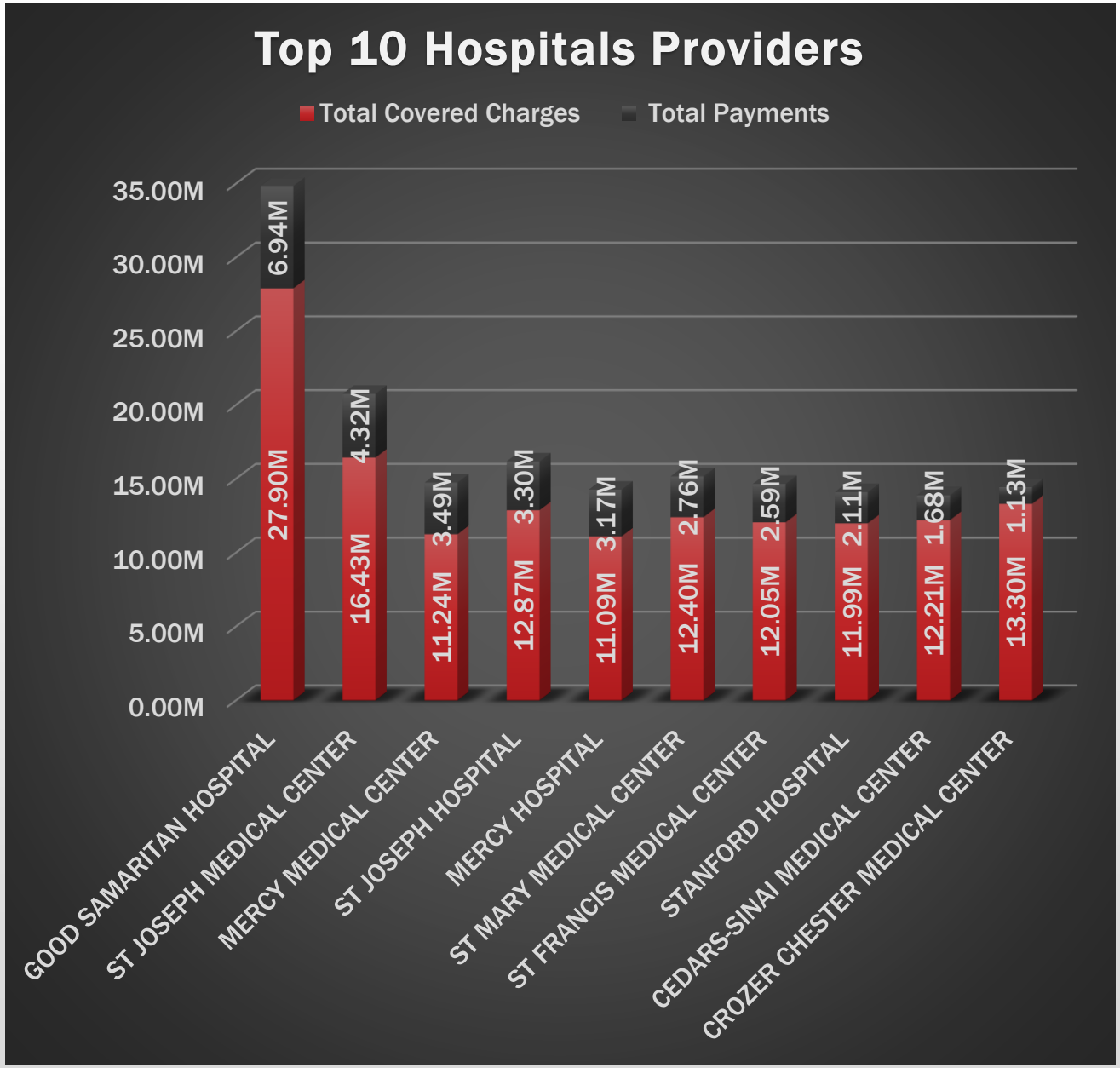


- Most diagnoses are happening in the state of California. This means that a significant number of Patients are receiving medical diagnoses compared to other states.
- Top Diagnoses Are Expensive
- People in California with specific health issues, indicate the need for improved, affordable healthcare. This information is crucial for government agencies, emphasizing the importance of enhancing healthcare quality and accessibility for better overall community health."

City ANALYSIS
OBJECTIVE: Relationship between Geographic Location (City) and the Number of Healthcare Providers



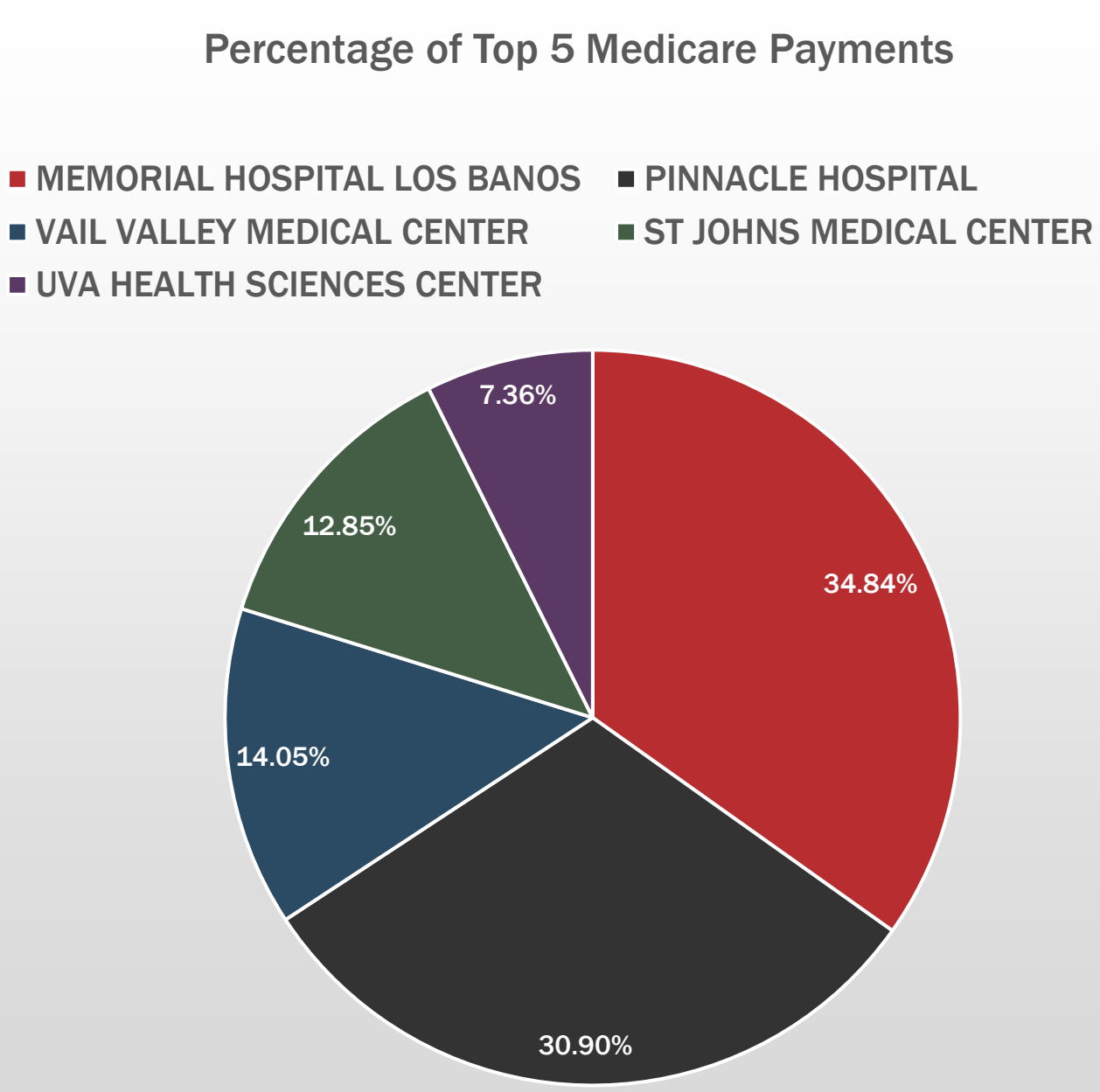
- Chicago offers a wide range of healthcare services and providers.
- Woodland Hills, Trophy Club, and Zuni have relatively fewer options for healthcare services
- Patients can make informed choices about where to seek healthcare.



Cost Analysis
Top 10 hospital providers

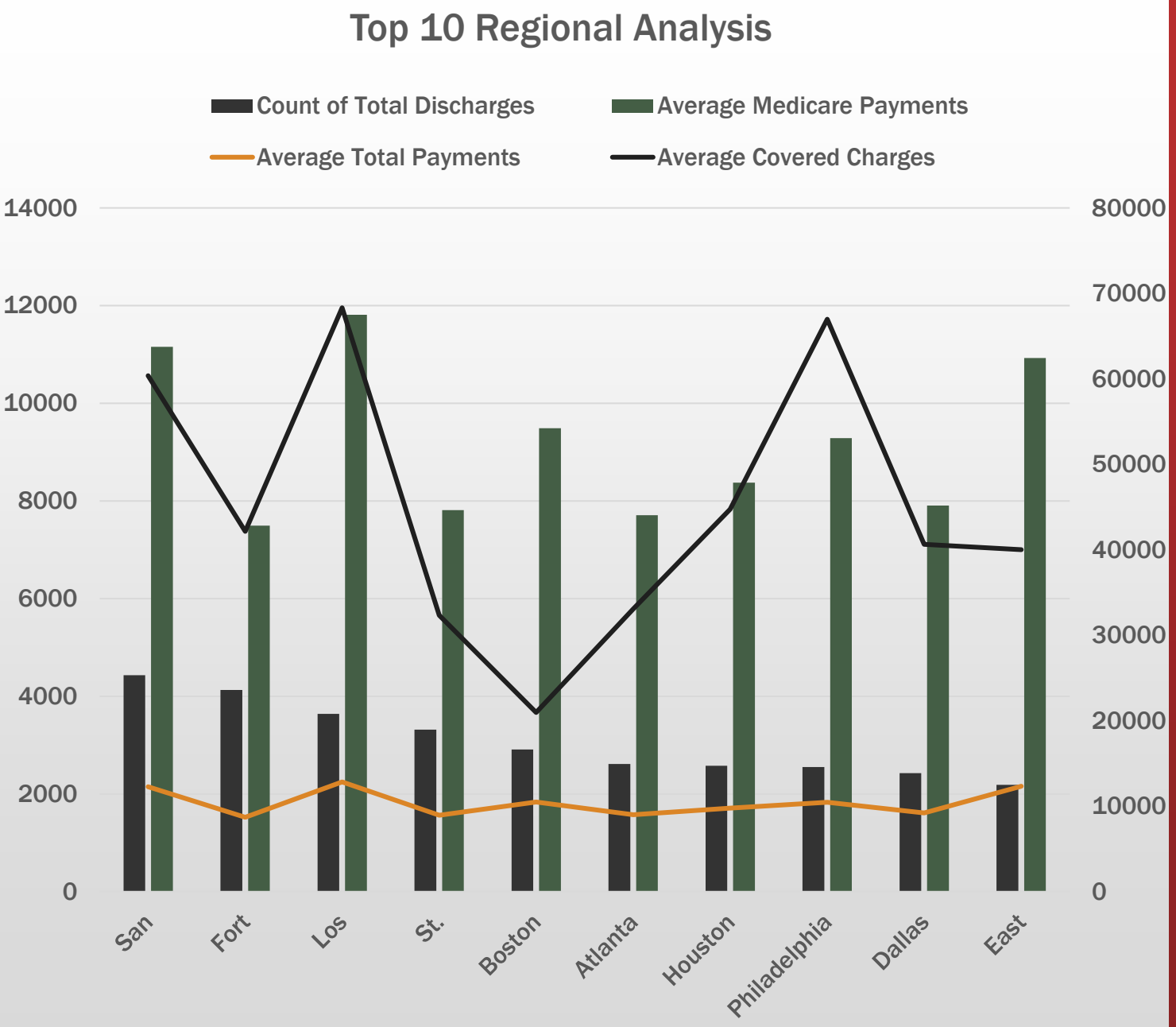
- Among the top 10 health providers, Good Samaritan Hospital has the highest total covered charges and total payments. They receive the most money for their healthcare services.

- Community General Hospital Has Lower Costs: In contrast, Community General Hospital has the lowest total covered charges, amounting to $2,995.61, and the lowest total payments, which are $3,623.44. This indicates that their healthcare services are relatively more affordable compared to others



Objective: Relationship between health provider and Medicare payment

- ✓ Looking at the pie chart of the top 5 Medicare payments, it's evident that the majority of Medicare payments, approximately 34.84%, go to MEMORIAL HOSPITAL LOS BANOS. This information can help patients understand where significant financial support is available.
- ✓ On the other hand, SONOMA DEVELOPMENTAL CENTER receives the lowest payments, totalling about $6,641.81. This indicates that they receive relatively less financial support from Medicare compared to others.



REGIONAL ANALYSIS

- "San" has the most total discharges (4,434), indicating high patient volume.
- "San" also has the highest average Medicare payments per discharge ($11,154.07), possibly signifying higher healthcare costs.
- "Los" and "Philadelphia" have high average total payments and covered charges, indicating potentially higher overall healthcare costs.
- "Boston" and "Dallas" are cost-efficient regions with lower average payments and charges

Recommendations

- Discharge data can inform government healthcare policies and patient awareness.
- Regular cost predictions benefit budget-conscious patients.
- Knowing treatment costs with or without Medicare promotes patient awareness.
- Hospitals should improve billing and payment processes.
- Medicare should offer billing guidelines and training for providers.
- Regions with lower payments should invest in healthcare infrastructure.
- Encourage regions to adopt cost-efficient healthcare practices and share best practices.

Thank you