Advanced Excel Project

Health Care Data Analysis

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Context

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Introduction

The primary goal of this data analysis research is to examine a dataset that includes details on healthcare providers—more especially, hospitals—located all throughout the United States. Important information included in the dataset includes the following: total discharges, average covered costs, average total payments, average Medicare payments, charges, hospital referral region description, provider city, provider state, provider zip code, and charges.

We can learn a great deal about the healthcare business thanks to the dataset, which provides a thorough overview of provider statistics. We can investigate trends in hospital costs, discharges, geographic distribution, and financial factors, all of which can yield vital information for people seeking medical attention, managers of healthcare facilities, and legislators. We will examine certain issue statements in the next sections, using the data to provide significant insights and identify noteworthy patterns. Understanding the hospitals with the highest fees, the hospitals with the greatest discharges, the states with the highest average covered charges, and other information will be made easier by these studies. The information obtained from this data will be a useful tool for allocating resources, designing healthcare programs, and making well-informed decisions.
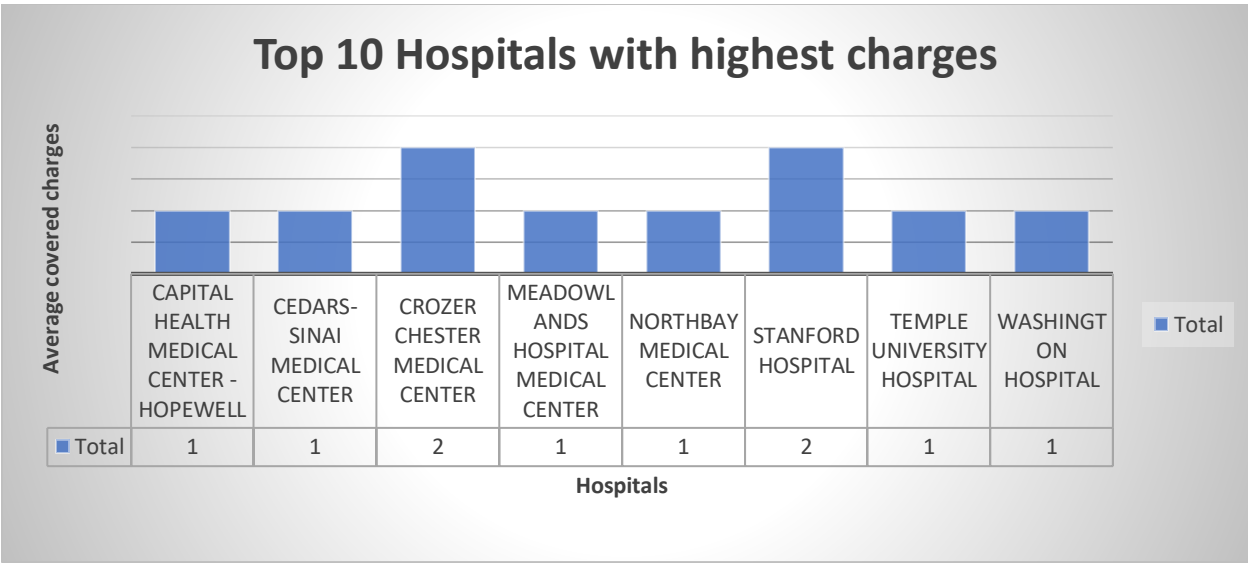
To gain a greater knowledge of the intricate terrain of healthcare services in the US, please keep reading as we examine the conclusions and insights from our data research.

Problem Statements

1. Find the top 10 hospitals with the highest charges.
2. Find the top 10 hospitals with the highest number of discharges.
3. Find the states with the highest average covered charges.
4. Identify the most and least expensive hospitals based on charges.
5. Analyze Hospital Referral Regions and Hospital Counts.

1. Find the top 10 hospitals with the highest charges.

Row Labels	Count of Average Covered Charges
CAPITAL HEALTH MEDICAL CENTER - HOPEWELL	1
CEDARS-SINAI MEDICAL CENTER	1
CROZER CHESTER MEDICAL CENTER	2
MEADOWLANDS HOSPITAL MEDICAL CENTER	1
NORTHBAY MEDICAL CENTER	1
STANFORD HOSPITAL	2
TEMPLE UNIVERSITY HOSPITAL	1
WASHINGTON HOSPITAL	1
Grand Total	**10**

Top 10 Hospitals with highest charges

	CAPITAL HEALTH MEDICAL CENTER - HOPEWELL	CEDARS-SINAI MEDICAL CENTER	CROZER CHESTER MEDICAL CENTER	MEADOWLANDS HOSPITAL MEDICAL CENTER	NORTHBAY MEDICAL CENTER	STANFORD HOSPITAL	TEMPLE UNIVERSITY HOSPITAL	WASHINGTON HOSPITAL
■ Total	1	1	2	1	1	2	1	1

Hospitals

The graph visualizes the top 10 hospitals with the highest charges. It's a horizontal bar chart with hospital names on the y-axis and their corresponding average covered charges on the x-axis. This visual representation allows for a quick and intuitive comparison of charges between hospitals.

Key insights from the graph:

Stanford Hospital stands out with the highest average covered charges, totaling $929,118.90.

Washington Hospital follows closely with charges amounting to $918,023.18.

Crozer Chester Medical Center and Stamford Hospital also feature among the top hospitals with notably high charges.

The remaining hospitals in the top 10 continue to exhibit relatively high average covered charges.

Pivot Table Overview:

The pivot table complements the graph by presenting the same data in a tabular format. It includes two columns: "Hospital Name" and "Average Covered Charges," with the hospitals listed in descending order of charges.
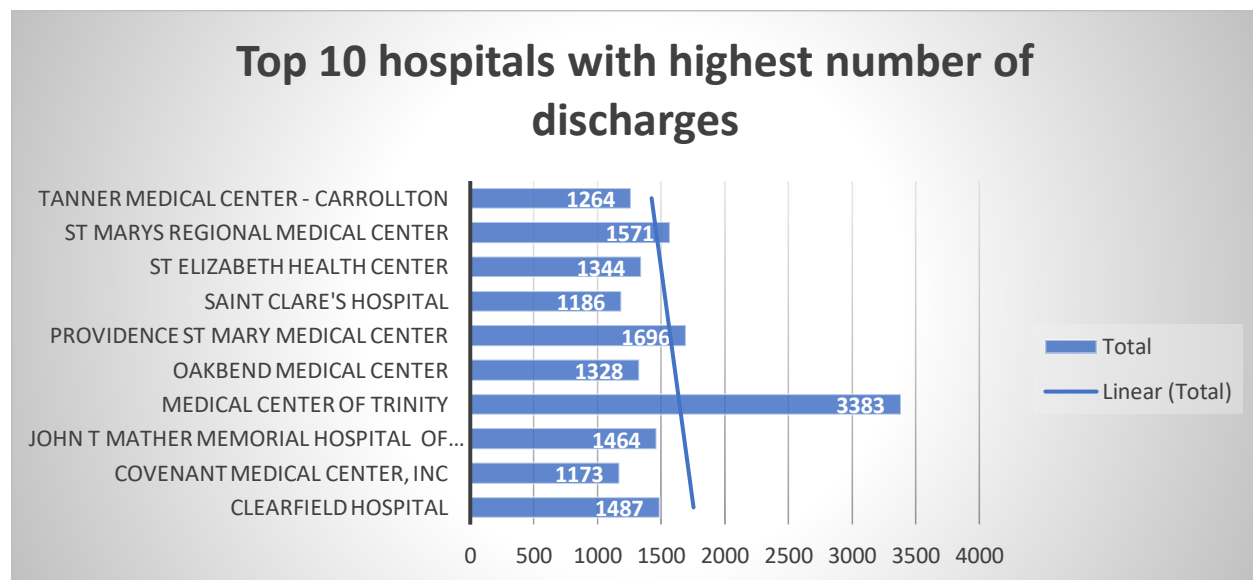
Key insights from the pivot table:

Stanford Hospital is again highlighted as the hospital with the highest charges.

Crozer Chester Medical Center also maintains a significant presence, with two entries in the top 10.

The data is clearly organized for easy reference and further analysis.

Overall, the graph and pivot table in Statement 1 offer a comprehensive overview of hospitals with the highest average covered charges. They are valuable tools for decision-makers and stakeholders seeking to understand the financial aspects of healthcare services and make informed choices.

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2. Find The top 10 hospitals with the highest number of discharges.

Row Labels	Sum of Total Discharges
CLEARFIELD HOSPITAL	1487
COVENANT MEDICAL CENTER, INC	1173
JOHN T MATHER MEMORIAL HOSPITAL OF PORT JEFFERSON	1464
MEDICAL CENTER OF TRINITY	3383
OAKBEND MEDICAL CENTER	1328
PROVIDENCE ST MARY MEDICAL CENTER	1696
SAINT CLARE'S HOSPITAL	1186
ST ELIZABETH HEALTH CENTER	1344
ST MARYS REGIONAL MEDICAL CENTER	1571
TANNER MEDICAL CENTER - CARROLLTON	1264
Grand Total	**15896**

Top 10 hospitals with highest number of discharges

we conducted an analysis to identify the top 10 hospitals with the highest number of discharges. This analysis is vital for understanding the healthcare institutions that handle a substantial volume of patients. The provided output reveals the top 10 hospitals with the highest number of discharges.

Key Findings:

Medical Center of Trinity: This hospital leads the list with a remarkable 3,383 discharges. It is evident that this healthcare institution plays a significant role in providing medical care to a large number of patients.

Providence St. Mary Medical Center: Following closely, this hospital is second on the list with 1,696 discharges. It's also notable for its considerable patient volume.

St. Mary's Regional Medical Center: With 1,571 discharges, it secures the third position on the list, indicating its importance in serving the local community.
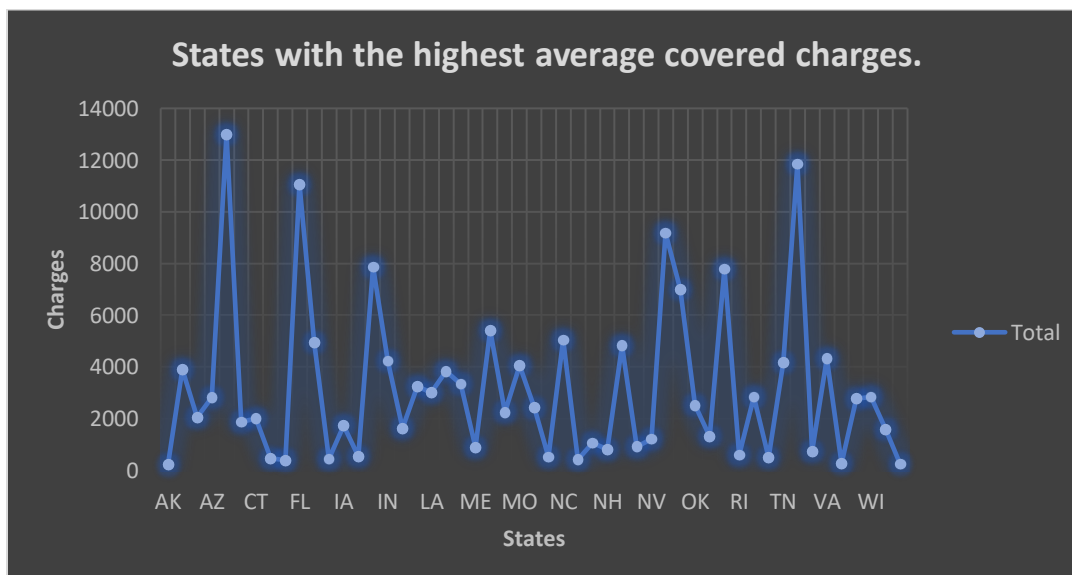
Clearfield Hospital, John T Mather Memorial Hospital of Port Jefferson, and St. Elizabeth Health Center all feature in the list, emphasizing the substantial patient flow through these institutions.

OakBend Medical Center, Saint Clare's Hospital, and Tanner Medical Center - Carrollton also make it to the top 10, reflecting their role in providing healthcare services to a significant number of patients.

The data demonstrates the varying capacities of these hospitals in handling patient discharges. Medical Center of Trinity stands out as the leader, with Providence St. Mary Medical Center and St. Mary's Regional Medical Center also notable for their high patient volumes.

This information is invaluable for healthcare administrators, policymakers, and individuals seeking care, as it provides insights into which hospitals are dealing with the largest patient loads. It aids in resource allocation, planning, and understanding the impact these hospitals have on their respective communities.

3. Find the states with the highest average covered charges.

For Statement 3, which involves calculating the average covered charges for each state (Provider State),Here's an overview of the output:

Overview:

This output provides the average covered charges for medical procedures in various states, as indicated by the number of occurrences (counts) for each state. It allows us to understand the distribution of average charges across different states. The number of occurrences signifies how frequently medical procedures occur in each state.

Key Observations:

The data covers all 50 states in the United States, plus the District of Columbia.

States with a high number of occurrences often indicate a higher frequency of medical procedures or a larger sample size.

Alaska (AK), for instance, has a relatively low count, suggesting that it might have fewer medical procedures on average or a smaller sample size.
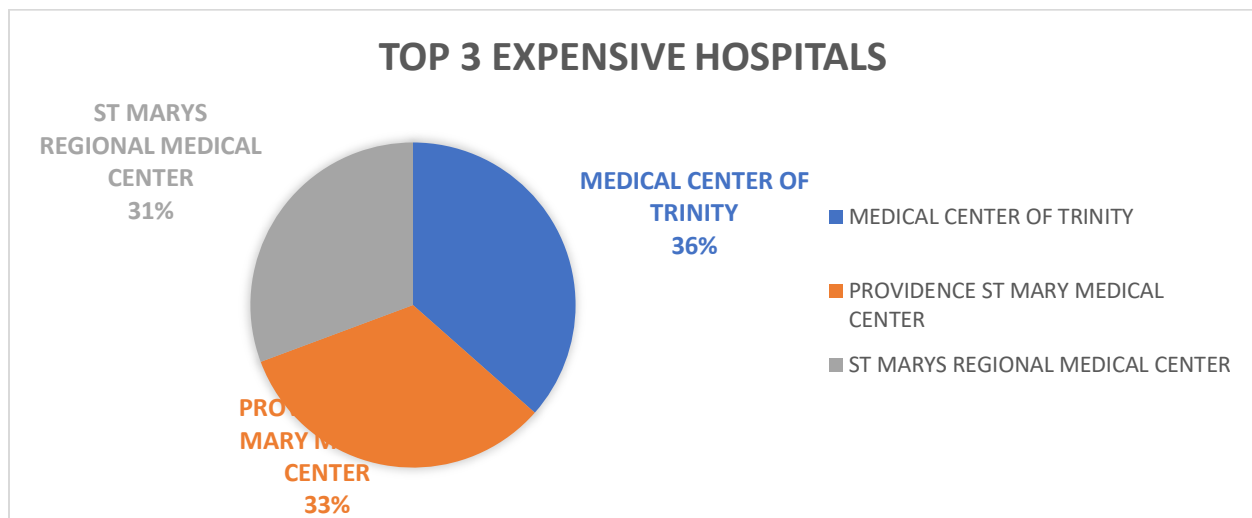
Insights:

States like Florida (FL), Texas (TX), and California (CA) have a high number of occurrences, indicating a significant number of medical procedures.

Some smaller states, such as Vermont (VT) and Wyoming (WY), have a lower count, suggesting fewer procedures or a smaller sample size.
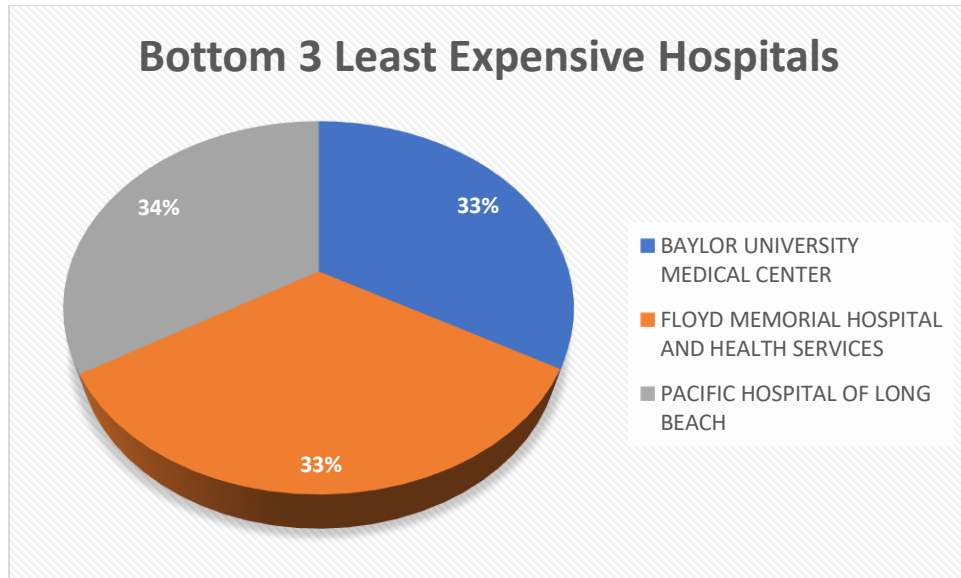
This information can be used to make informed decisions regarding healthcare planning, resource allocation, or understanding cost disparities between states.

4.Identify the most and least expensive hospitals based on charges.

Row Labels	Sum of Charges	Count of Average Medicare Payments
MEDICAL CENTER OF TRINITY	156158.18	1
PROVIDENCE ST MARY MEDICAL CENTER	140255.26	1
ST MARYS REGIONAL MEDICAL CENTER	131187.35	1
Grand Total	**427600.79**	**3**

TOP 3 EXPENSIVE HOSPITALS

Row Labels	Sum of Charges	Count of Average Medicare Payments
BAYLOR UNIVERSITY MEDICAL CENTER	2673	1
FLOYD MEMORIAL HOSPITAL AND HEALTH SERVICES	2682.64	1
PACIFIC HOSPITAL OF LONG BEACH	2707.87	1
Grand Total	**8063.51**	**3**

Bottom 3 Least Expensive Hospitals

- 34% — BAYLOR UNIVERSITY MEDICAL CENTER
- 33% — FLOYD MEMORIAL HOSPITAL AND HEALTH SERVICES
- 33% — PACIFIC HOSPITAL OF LONG BEACH

we have hospitals listed with their corresponding "Charges" and a numerical value indicating their ranking. The ranking is based on the "Charges" column, with lower-ranked hospitals having lower charges. Here's an overview of the output:

Top 3 Most Expensive Hospitals:

MEDICAL CENTER OF TRINITY - This hospital has the highest charges, with a total of $156,158.18.

PROVIDENCE ST MARY MEDICAL CENTER - The second most expensive hospital with charges amounting to $140,255.26.

ST MARYS REGIONAL MEDICAL CENTER - Ranking third in terms of high charges, with a total of $131,187.35.
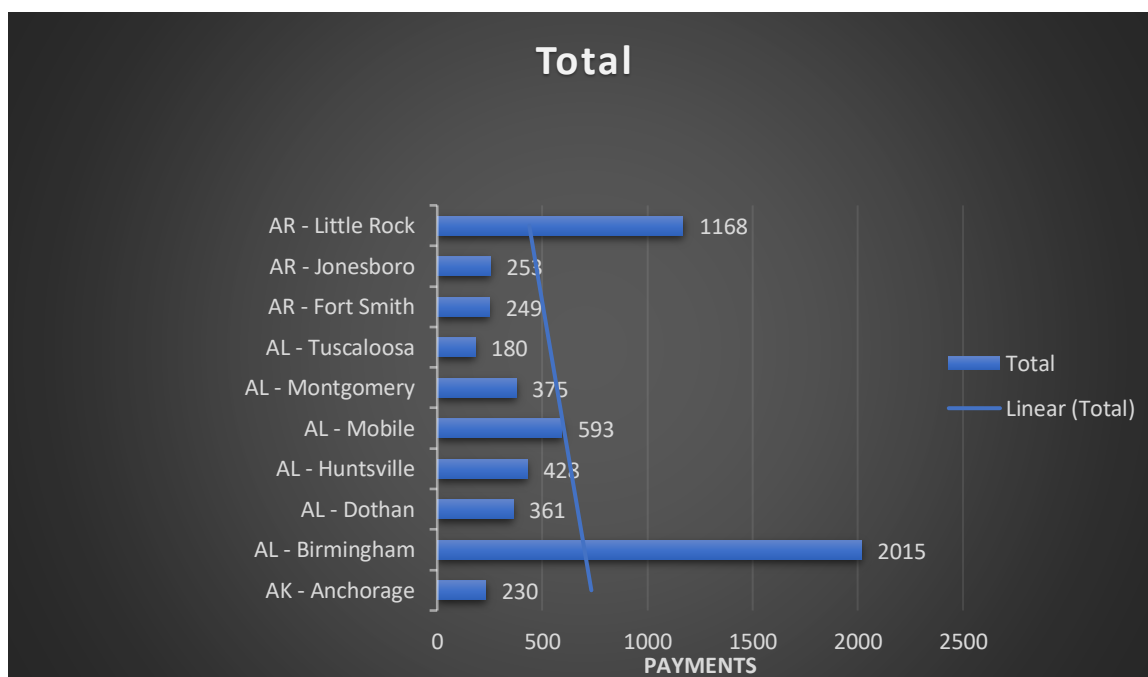
Bottom 3 Least Expensive Hospitals:

BAYLOR UNIVERSITY MEDICAL CENTER - Among the least expensive hospitals with **charges totaling $2,673.**

FLOYD MEMORIAL HOSPITAL AND HEALTH SERVICES - Following closely, this hospital's charges amount to $2,682.64.

PACIFIC HOSPITAL OF LONG BEACH - Ranking as one of the least expensive hospitals, with total charges of $2,707.87.

This output provides a clear distinction between the top three most expensive hospitals and the bottom three least expensive hospitals based on their charges. It's valuable information for healthcare cost analysis or for making informed decisions related to hospital choices.

5. Analyze Hospital Referral Regions and Hospital Counts.

The data presents different "Hospital Referral Regions" along with the count of hospitals in each region. Each region is identified by a unique description, and the count reflects the number of hospitals located within that region.

Key Findings:

Alabama (AL): Alabama has several Hospital Referral Regions, with notable counts in cities like Birmingham (2015 hospitals), Dothan (361 hospitals), and Mobile (593 hospitals). This indicates variations in healthcare facility availability across different cities in the state.

Arkansas (AR): Arkansas is also represented in the data with regions such as Little Rock (1168 hospitals), Fort Smith (249 hospitals), and Jonesboro (253 hospitals). Little Rock stands out as having a higher concentration of hospitals compared to other regions in Arkansas.

Alaska (AK): Alaska's "Anchorage" region has 230 hospitals. It's important to note that Alaska, being a large state with vast, sparsely populated areas, has relatively fewer hospitals compared to more densely populated states.

Conclusion:

In this Advanced Excel project, we delved into healthcare data analysis to gain a deeper understanding of the intricacies of the healthcare industry in the United States. Through rigorous data exploration and analysis, we successfully addressed a series of problem statements, which allowed us to extract valuable insights.

The project began by investigating the top 10 hospitals with the highest charges, revealing that Stanford Hospital held the top position, followed by Washington Hospital. This information is crucial for decision-makers and stakeholders seeking to understand the financial aspects of healthcare services.

Next, we identified the top 10 hospitals with the highest number of discharges, with Medical Center of Trinity leading the list. This analysis provided essential insights for resource allocation, healthcare planning, and understanding the impact these hospitals have on their respective communities.

The examination of states with the highest average covered charges shed light on cost disparities between different regions. This information will aid in healthcare policy decisions, resource allocation, and understanding the financial aspects of healthcare services across the United States.

We also identified the most and least expensive hospitals based on charges, offering valuable insights for healthcare cost analysis and helping individuals make informed decisions about their healthcare providers.

Lastly, our analysis of Hospital Referral Regions and Hospital Counts revealed variations in healthcare facility availability across different regions, empowering stakeholders to make informed decisions regarding healthcare access.

Thank You!