# HEALTHCARE ANALYSIS - ADVANCED EXCEL PROJECT

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# INTRODUCTION & OBJECTIVES

The utilized dataset is the Hospital Charges data, encompassing over 150,000 records documenting the treatment of diverse medical conditions in numerous hospitals across the United States. The dataset includes information on 3000+ healthcare providers, such as hospitals and medical centers. Covering all 50 states and around 2000 cities nationwide, it details the treatment costs for approximately 7 million patients. Each record corresponds to a distinctive combination of state, city, ailment, and provider, accompanied by the average treatment cost for a specific medical condition.

The main goal of this project is to develop a thorough grasp of advanced Excel tools for analyzing the provided dataset. Emphasis will be placed on data visualization, utilizing a variety of tools within Excel. The project seeks to improve our expertise in data analysis and visualization techniques by leveraging the robust features and functions offered by Microsoft Excel.

# AILMENT TREATMENTS DESCRIPTION

There are 100 different ailments in this dataset, in which the top and bottom there are:

194 – SIMPLE PNEUNOMIA & PLEURISY W

CC is the most common treatment with a count of 3,023, a, 1.85% of the total

690 – KIDNEY & URINARY TRACT common treatment W/O MCC is the second most common treatment with a count of 2,989, a 1.83%

292 – HEARTFAILURE & SHOCK W CC is the third most common common treatment with a count of 2,953, a 1.81% of the total

885 – PSYCHOSES is the least common treatment with a count of 613, a 0.38% of the total.

251 – PERC CARDIOVASC PROC W/O CORONARY ARTERY STENTW/O MCC is the second least common treatment with a count of 727, a 0.45% of the total.

917 – POISONING & TOXIC EFFECTS OF DRUGS W MCC is the third least common treatment with a count of 843, a 0.52% of the total

# DIAGNOSTIC RELATED GROUPS (DRG) BY PROVIDER CITY

| Provider City | Count of DRG Definition |
|---|---|
| ALABASTER | 13 |
| ANNISTON | 12 |
| BIRMINGHAM | 74 |
| BOAZ | 13 |
| DECATUR | 12 |
| DOTHAN | 26 |
| FAIRHOPE | 12 |
| FLORENCE | 13 |
| FOLEY | 12 |
| GADSDEN | 26 |
| HUNTSVILLE | 13 |
| MOBILE | 24 |
| MONTGOMERY | 13 |
| OPELIKA | 13 |
| TUSCALOOSA | 12 |

Table 1

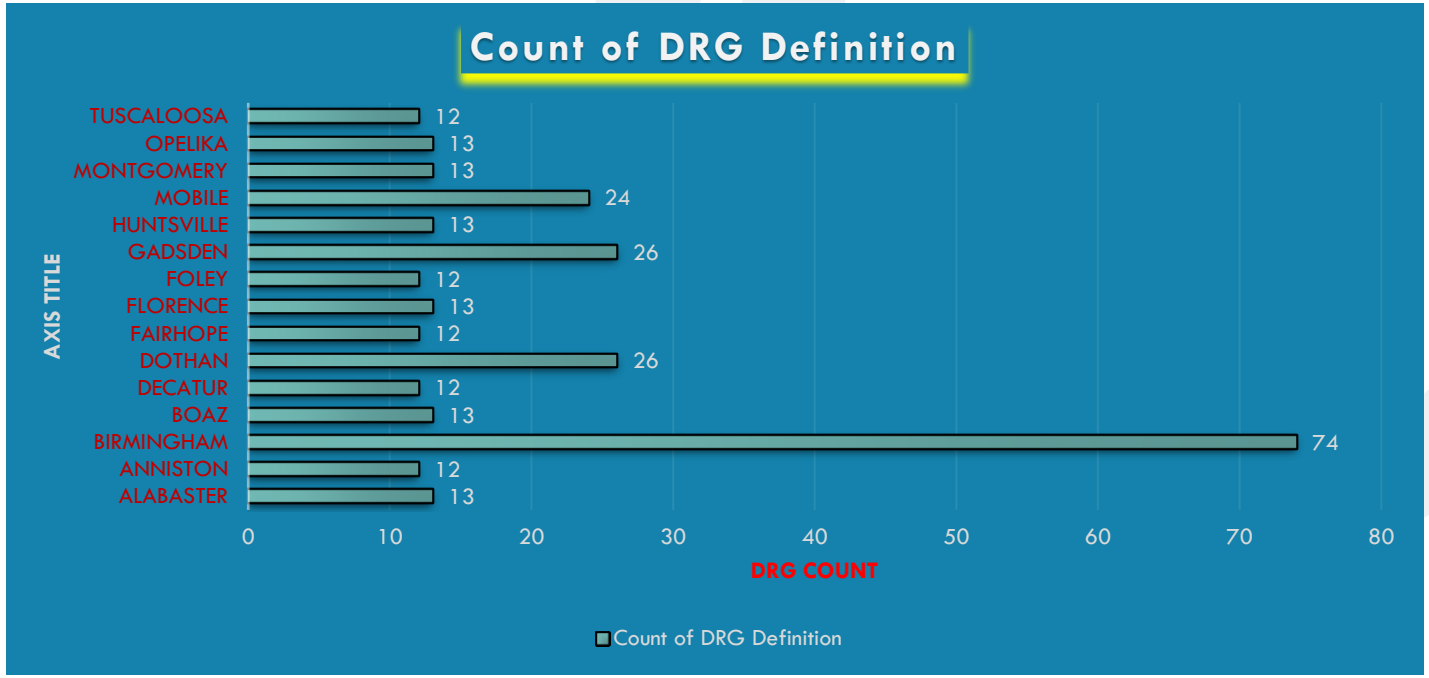


Figure 1

The data represents the count of Diagnosis-Related Group (DRG) definitions for different provider cities in Alabama. Each city is associated with a specific number of DRG definitions, reflecting the variety and quantity of medical diagnoses and procedures within those cities. Birmingham has the highest count with 74 DRG definitions, indicating a diverse range of medical conditions and treatments covered by these classifications in the healthcare facilities of this city. Gadsden and Dothan both have 26 DRG definitions, signifying a substantial but slightly lower variety compared to Birmingham.

Mobile has 24 DRG definitions, indicating a relatively high diversity of medical cases and procedures in healthcare facilities within the city.

Several other cities, such as Alabaster, Anniston, Decatur, Fairhope, Florence, Foley, Huntsville, Montgomery, Opelika, and Tuscaloosa, have counts ranging from 12 to 13 DRG definitions. These cities also represent a variety of medical conditions and treatments but with a lower volume compared to the larger metropolitan areas.

In essence, the data provides insights into the distribution and complexity of medical cases and procedures across different cities in Alabama, as categorized by the DRG definitions

# TOP 10 AVERAGE HEALTHCARE CHARGE BY STATES

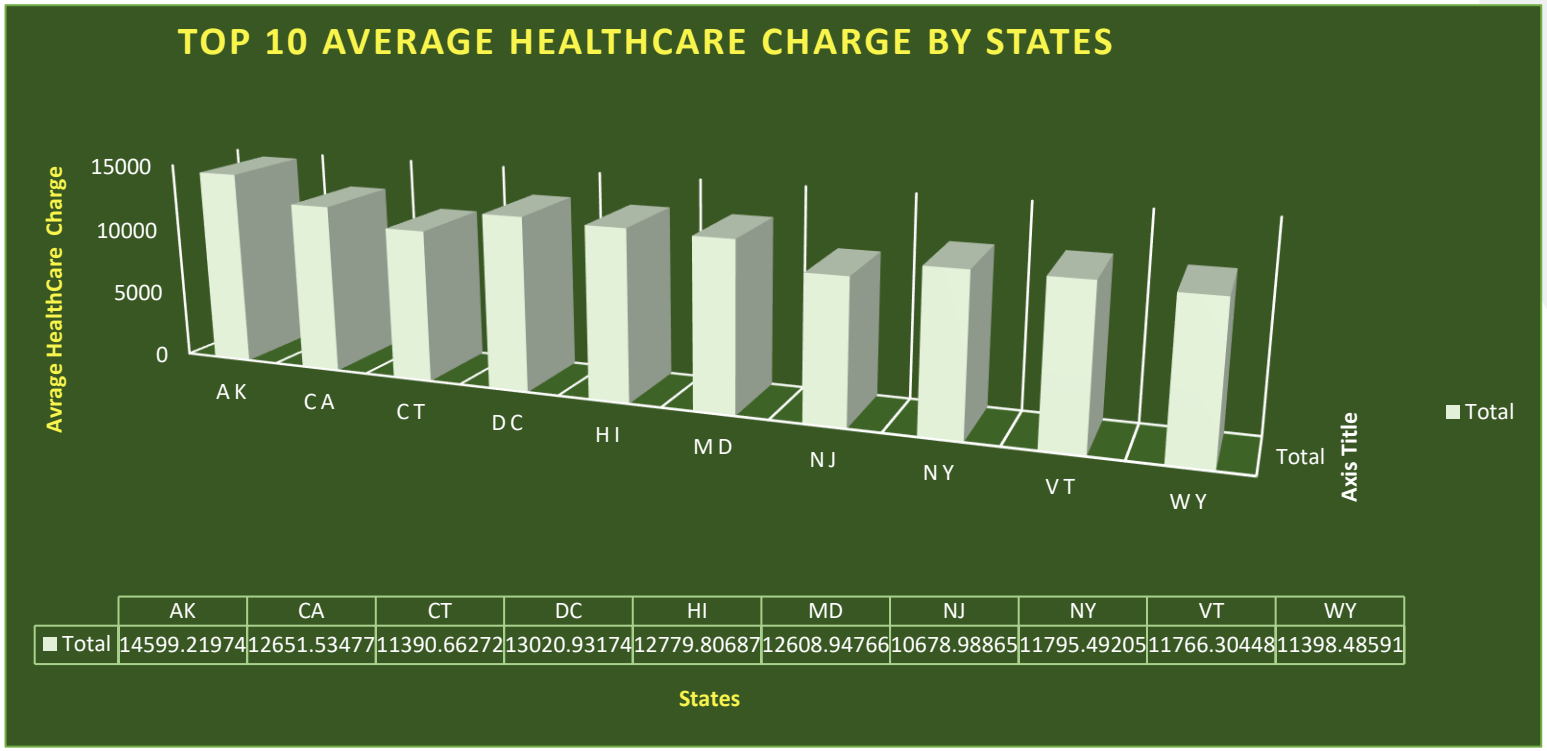


Figure 2

| STATES | AVERAGE OF CHARGE |
|---|---|
| AK | 14599.21974 |
| CA | 12651.53477 |
| CT | 11390.66272 |
| DC | 13020.93174 |
| HI | 12779.80687 |
| MD | 12608.94766 |
| NJ | 10678.98865 |
| NY | 11795.49205 |
| VT | 11766.30448 |
| WY | 11398.48591 |
| **Grand Total** | **12065.52165** |

Table 2

The highlighted summary statistics present the average charges for healthcare providers across various states. Alaska (AK) stands out with the highest average charge of $14,599.22, signifying relatively higher healthcare costs. California (CA) follows closely with an average charge of $12,651.53, placing it in the moderately high-cost category. On the other hand, New Jersey (NJ) boasts one of the lower average charges at $10,678.99. The "Grand Total" reflects the overall average charge across all states, amounting to $12,065.52. These statistics shed light on the diversity in healthcare charges across states, identifying regions with varying cost implications.

# MAP OF AVERAGE CHARGE BY STATE & ZIPCODE

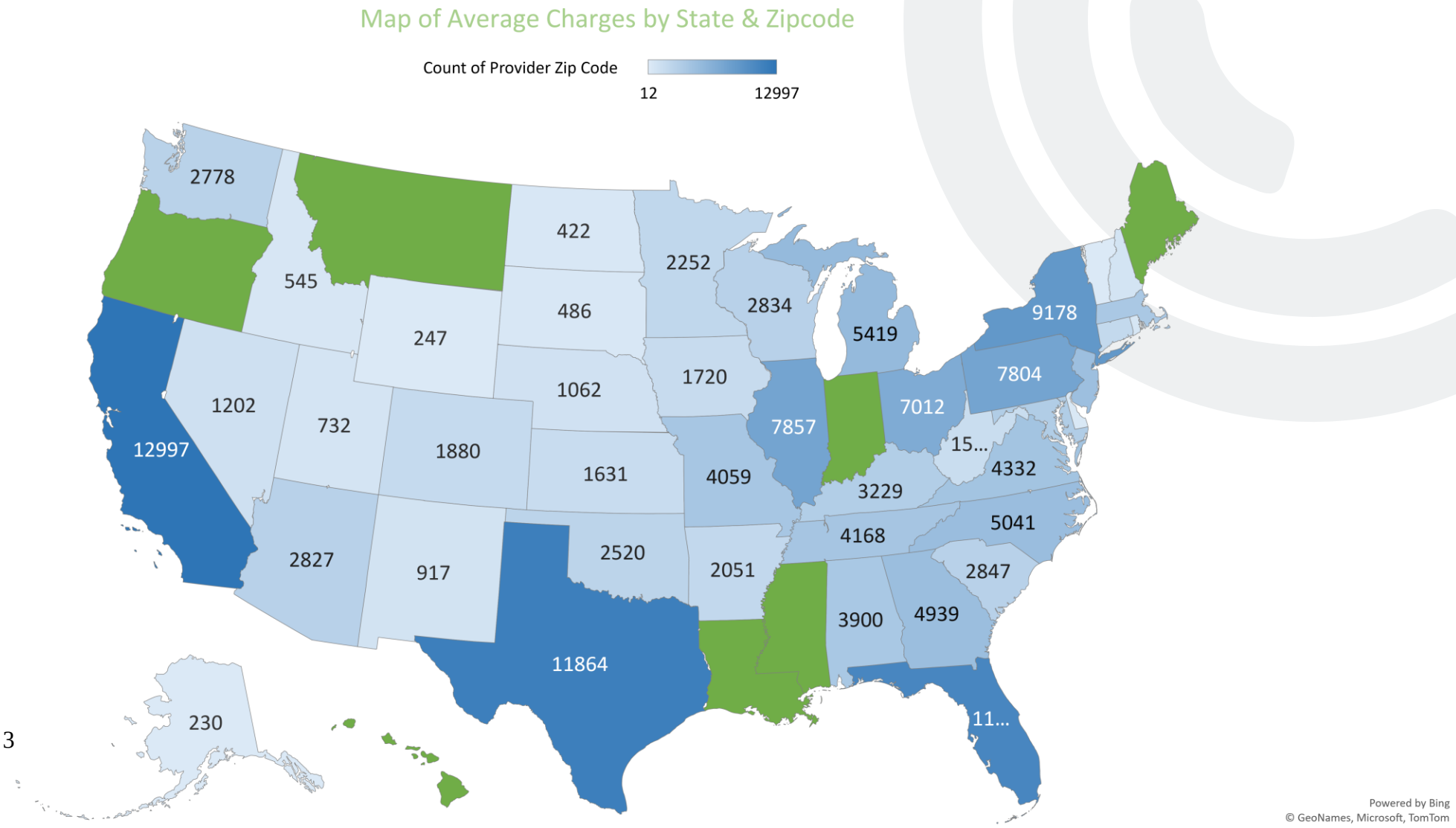


Figure 3

## SEE APPENDIX FOR DETAILS

# AVERAGE OF HEALTHCARE CHARGES FOR TOP 10 PROVIDER CITIES

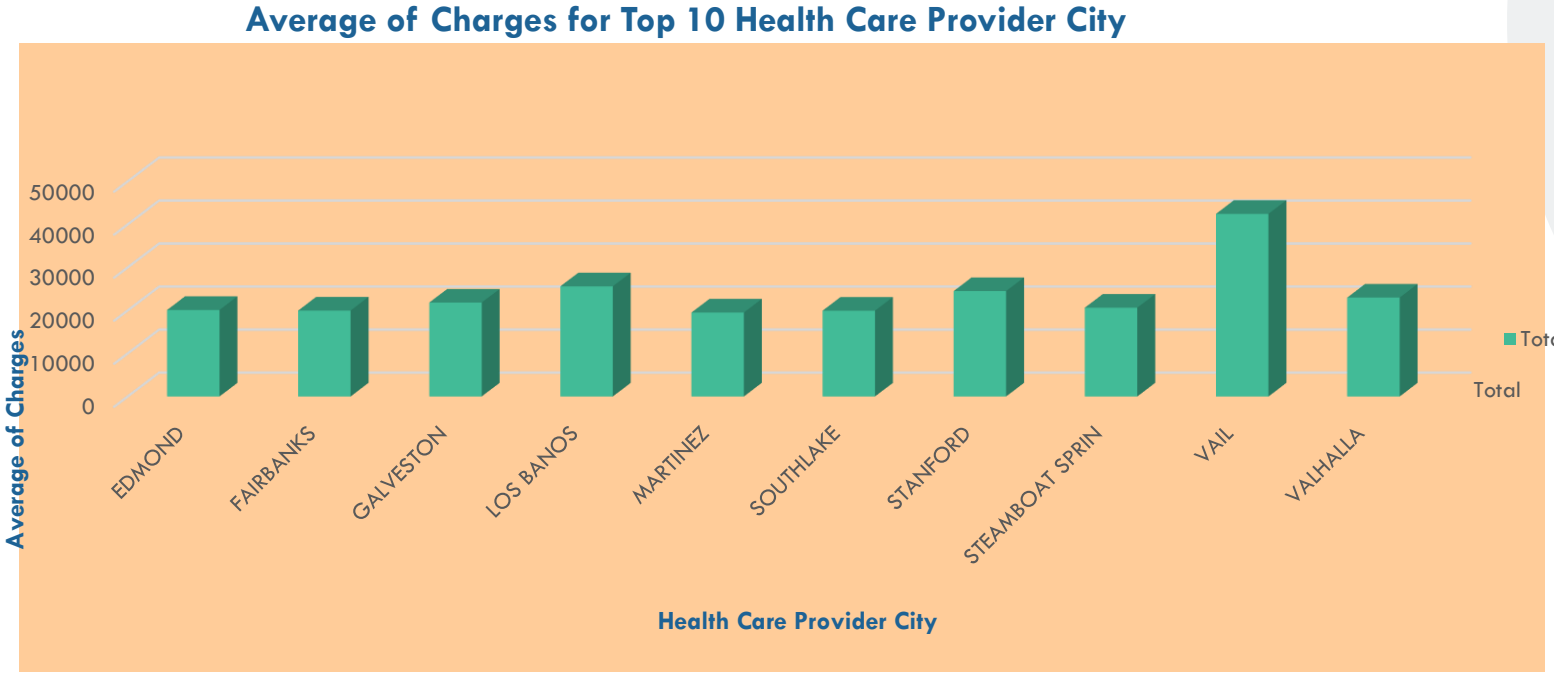


Figure 4

| Health Care Provider | Average of Charges |
|---|---|
| EDMOND | 20096.57 |
| FAIRBANKS | 19966.09276 |
| GALVESTON | 21816.86232 |
| LOS BANOS | 25592.8725 |
| MARTINEZ | 19507.039 |
| SOUTHLAKE | 19936.415 |
| STANFORD | 24493.8364 |
| STEAMBOAT SPRIN | 20628.11 |
| VAIL | 42446.71 |
| VALHALLA | 22982.27293 |
| **Grand Total** | **22759.39057** |

Table 3

The highlighted summary statistics showcase the average charges for healthcare providers in various locations. Notably, Vail exhibits the highest average charge at $42,446.71, indicating comparatively elevated healthcare costs in that area. Los Banos follows with a substantial average charge of $25,592.87, signifying relatively higher costs as well. Stanford registers an above-average charge of $24,493.84, pointing to relatively expensive healthcare services in that location. Valhalla falls within the upper range with an average charge of $22,982.27, indicating moderately high healthcare costs. Galveston, Steamboat Springs, Southlake, and Edmond have average charges ranging from $19,507.04 to $21,816.86, placing them in a moderate range. Fairbanks and Martinez share similar mid-range averages at $19,966.09 and $19,507.04, respectively. These statistics offer insights into the diverse landscape of healthcare charges, with the "Grand Total" reflecting an overall average charge of $22,759.39 across all locations.

# TOP 10 HEALTHCARE PROVIDERS

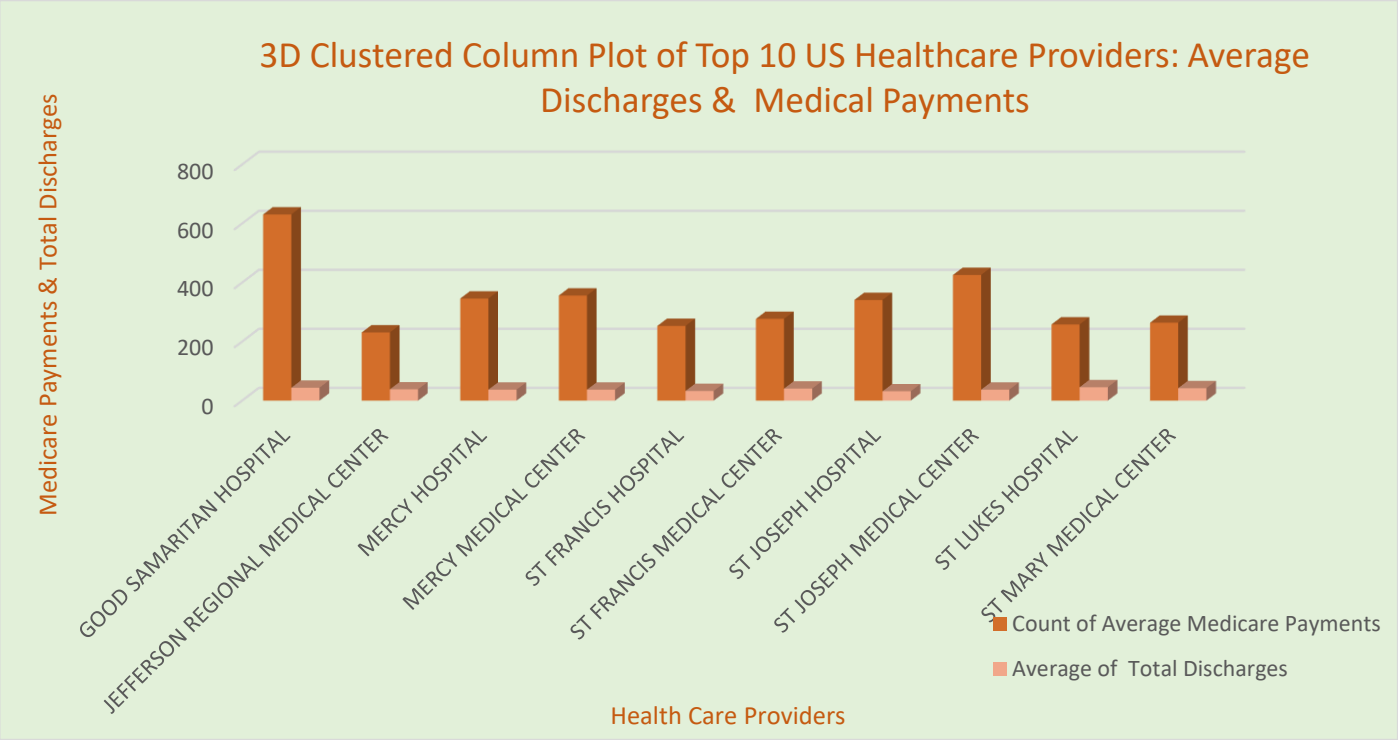


Figure 5

| HEALTH CARE CENTER | Count of Average Medicare Payments | Average of Total Discharges |
|---|---|---|
| GOOD SAMARITAN HOSPITAL | 631 | 43.66402536 |
| JEFFERSON REGIONAL MEDICAL CENTER | 231 | 38.16450216 |
| MERCY HOSPITAL | 346 | 37.04624277 |
| MERCY MEDICAL CENTER | 356 | 37.05337079 |
| ST FRANCIS HOSPITAL | 253 | 32.68379447 |
| ST FRANCIS MEDICAL CENTER | 277 | 40.8700361 |
| ST JOSEPH HOSPITAL | 341 | 31.6568915 |
| ST JOSEPH MEDICAL CENTER | 426 | 37.14553991 |
| ST LUKES HOSPITAL | 258 | 45.47674419 |
| ST MARY MEDICAL CENTER | 264 | 42.10606061 |
| **Grand Total** | **3383** | **38.851611** |

Table 4

The provided summary statistics outline the count of average Medicare payments and the average total discharges for various hospitals. St. Luke's Hospital exhibits the highest average total discharges among the listed hospitals, reaching 45.48, suggesting a significant patient load. Good Samaritan Hospital, with 631 average Medicare payments, indicates a high volume of Medicare-related cases. St. Joseph Medical Center and Mercy Hospital are notable for their substantial counts of average Medicare payments, each with 426 and 346, respectively, reflecting significant utilization of Medicare services. The overall grand total across all hospitals accounts for 3,383 cases with an average total discharge of 38.85, providing a comprehensive overview of the dataset's scope. These statistics offer valuable insights into the Medicare-related dynamics and patient discharges for the listed hospitals.

# AVERAGE PAYMENTS BY HOSPITAL REFERRAL REGIONS


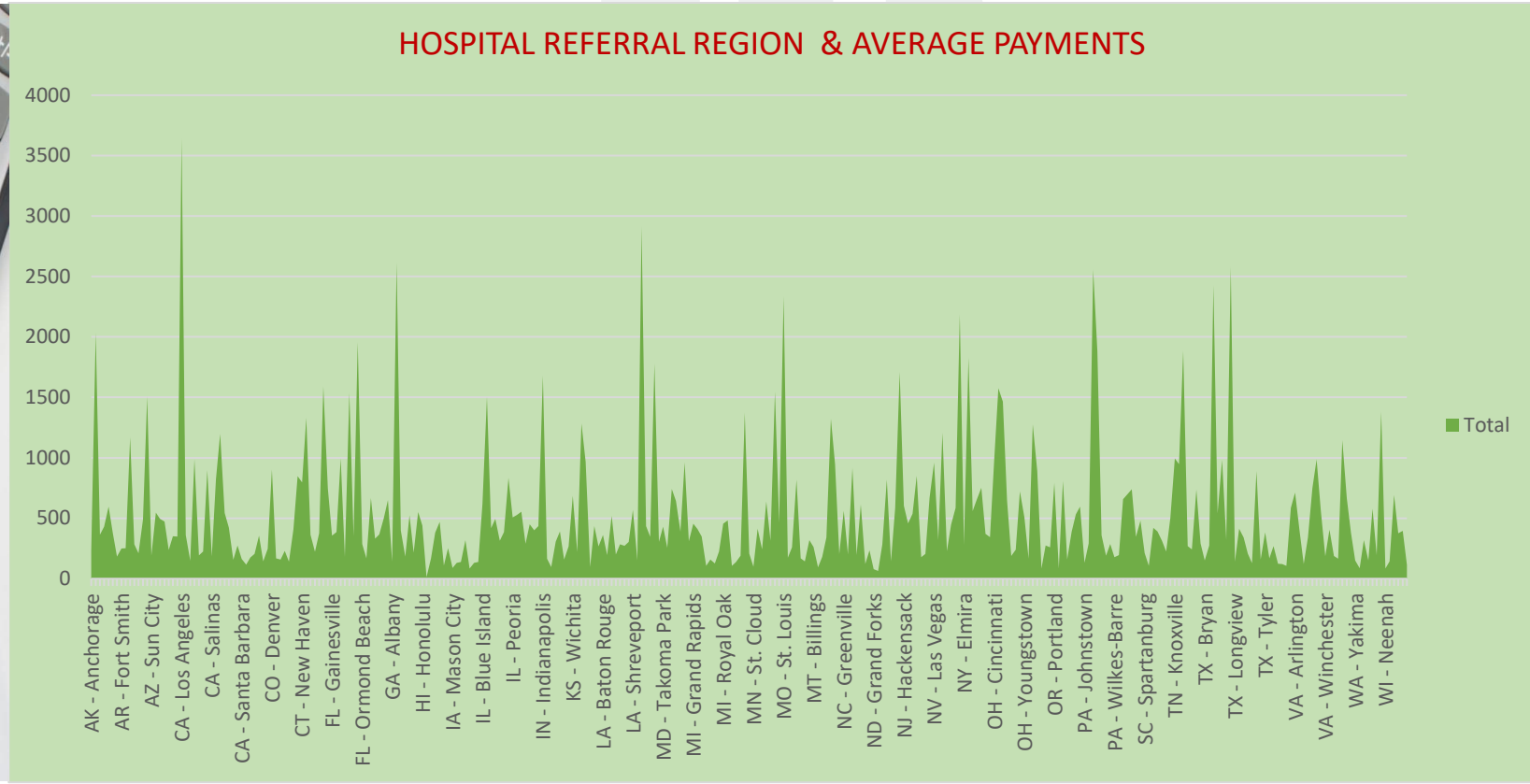


Figure 6

The dataset provides counts of Average Total Payments for various Hospital Referral Regions (HRRs) in the United States, totaling 162,976 instances. Los Angeles, CA, stands out with the highest count at 3,640, indicative of a robust and active healthcare system. In contrast, Grand Forks, ND, has the lowest count at 80, suggesting a comparatively smaller healthcare system. These variations underscore disparities in healthcare utilization and service availability across regions. Policymakers and healthcare professionals should consider these differences to address disparities, allocate resources effectively, and ensure equitable access to healthcare services nationwide.

# AVERAGE MEDICARE PAYMENTS BY STREET ADDRESS

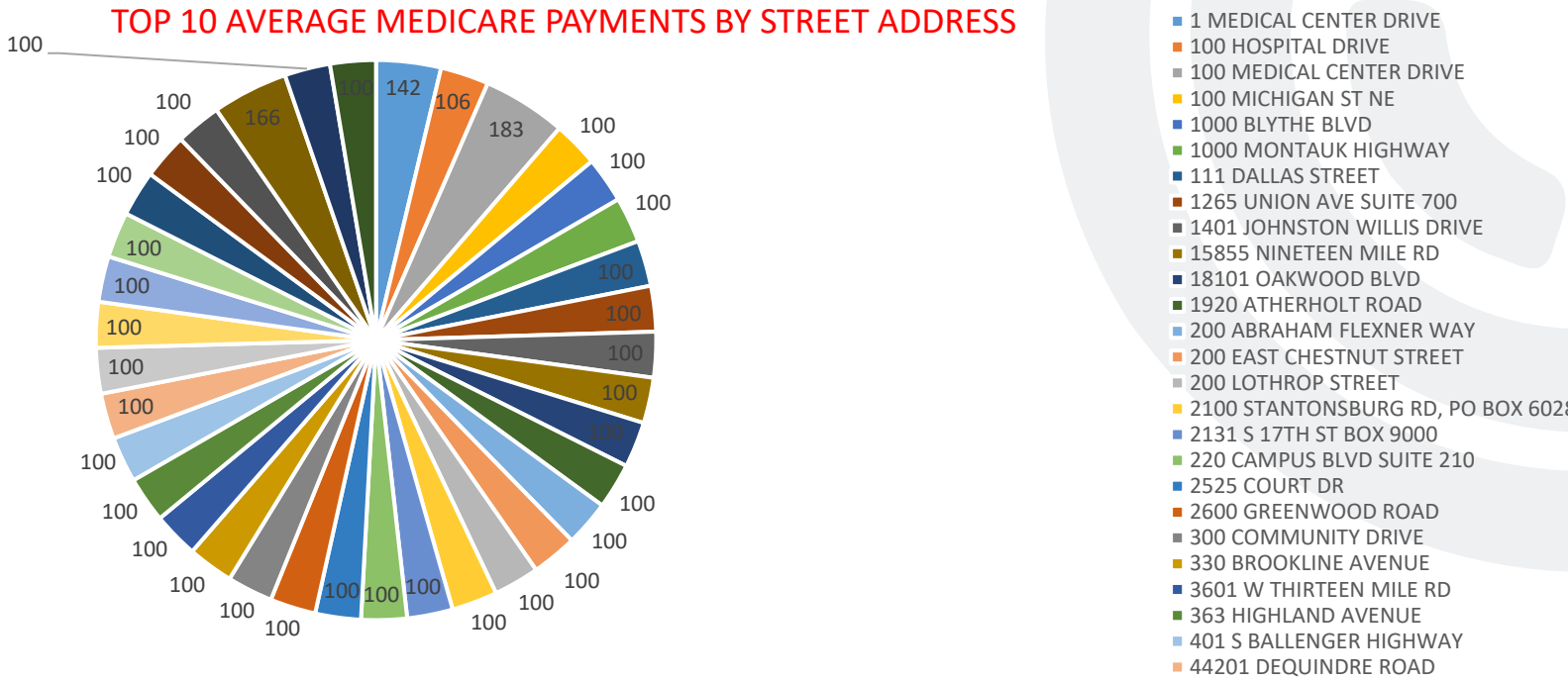


Figure 7

The dataset provides counts of Average Medicare Payments for various healthcare facilities, revealing variations in healthcare utilization and payments across different locations. Some facilities, such as the one at 800 Washington Street, have a notably higher count at 166, indicating potentially higher healthcare activity or services provided. On the other hand, numerous facilities, including those at 1000 Blythe Blvd, 1401 Johnston Willis Drive, or 509 Biltmore Ave, have a count of 100, suggesting a standard level of Medicare payments. The disparities in payment counts may reflect differences in the socio-economic status of neighborhoods served by these facilities. Those in wealthier neighborhoods may have higher healthcare utilization and payments, possibly due to better access to healthcare services, advanced medical facilities, or a greater prevalence of health insurance. In contrast, facilities in neighborhoods with lower socio-economic status may experience standard or lower payment counts, potentially indicating disparities in healthcare access and utilization between richer and poorer neighborhoods. Policymakers and healthcare professionals should consider these variations to address potential inequalities in healthcare services and resource allocation across different communities.

# SUMMARY

The provided data highlights significant disparities in payments and discharges across hospitals, states, and regions in the United States, suggesting that higher costs may be associated with superior-quality treatment, particularly for specific medical conditions requiring more extensive resources. Regions with larger populations tend to incur higher healthcare expenses, while those with lower average medical payments may have greater flexibility for implementing cost-cutting measures. Further research is essential to refine our understanding of the cost dynamics and resource allocation in the healthcare system.

Consistent and reliable funding is crucial for the effective functioning of healthcare services, as inadequate financial support can lead to suboptimal medical care and hinder the recruitment of skilled medical professionals. Additionally, there is a significant risk that underpaid medical professionals may deliver lower-quality care, compromising overall healthcare outcomes. To address this issue, healthcare providers with lower costs should establish a standardized charge that aligns with the quality of services they provide, ensuring fair compensation for medical professionals and contributing to maintaining a high standard of healthcare delivery.



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# APPENDIX

# TABLE OF AVERAGE CHARGE BY STATE & ZIPCODE

| States | Count of Provider Zip Code | Average of Charges |
|---|---|---|
| AK | 230 | 14599.22 |
| AL | 3900 | 7444.802 |
| AR | 2051 | 8034.074 |
| AZ | 2827 | 10179 |
| CA | 12997 | 12651.53 |
| CO | 1880 | 9515.722 |
| CT | 1996 | 11390.66 |
| DC | 459 | 13020.93 |
| DE | 391 | 10384.87 |
| FL | 11074 | 8846.182 |
| GA | 4939 | 8940.521 |
| HI | 441 | 12779.81 |
| IA | 1720 | 8329.92 |
| ID | 545 | 9863.184 |
| IL | 7857 | 9806.652 |
| IN | 4223 | 8776.454 |
| KS | 1631 | 8464.212 |
| KY | 3229 | 8278.589 |
| LA | 3027 | 8638.663 |
| MA | 3842 | 10279.98 |
| MD | 3330 | 12608.95 |
| ME | 888 | 8679.995 |
| MI | 5419 | 9754.42 |
| MN | 2252 | 9948.237 |
| MO | 4059 | 8724.631 |
| MS | 2410 | 8229.165 |
| MT | 506 | 9252.803 |
| NC | 5041 | 9089.436 |
| ND | 422 | 9827.638 |
| NE | 1062 | 9331.683 |
| NH | 823 | 9289.662 |
| NJ | 4826 | 10678.99 |
| NM | 917 | 9619.841 |
| NV | 1202 | 10291.72 |
| NY | 9178 | 11795.49 |
| OH | 7012 | 8808.128 |
| OK | 2520 | 8353.641 |
| OR | 1299 | 10436.19 |
| PA | 7804 | 9100.043 |
| RI | 588 | 10509.57 |
| SC | 2847 | 9132.421 |
| SD | 486 | 10141.69 |
| TN | 4168 | 8153.951 |
| TX | 11864 | 9243.98 |
| UT | 732 | 9749.907 |
| VA | 4332 | 8887.752 |
| VT | 270 | 11766.3 |
| WA | 2778 | 10543.15 |
| WI | 2834 | 9270.706 |
| WV | 1589 | 7968.48 |
| WY | 247 | 11398.49 |

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Figure 2 Top 10 Average Healthcare Charge by States .....

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Figure 7 Average Medicare Payments by Street Address.....


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# THANK YOU