

The Hospital Value-Based Purchasing (VBP) Program

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1

Hospital VBP Program

What is it? Why is it important?

- Quality of care
- Better experience
- Eliminate or reduce adverse events
- Evidence-based care standards
- Incentives for hospitals
- Increases the transparency
- Recognizes hospitals with Lower Costs and Quality Care

2

Procedure

- 1) Merging Information (csv files)
- 2) Selecting information (applicable columns)
- 3) Cleaning information (NaN, Missing Data)

3

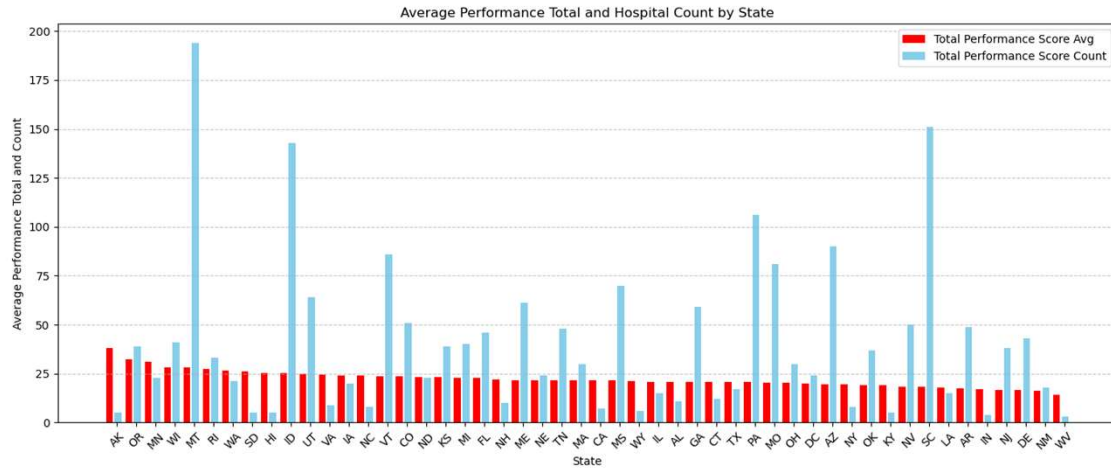
Questions of Investigation

1) Which state has the best Hospital based on the performance of their VBP score?

- **Groupby-** State
- **Count Values-** Number of Hospitals
- **Mean-** VBA Scores
- **Plotted Data-** Bar Chart

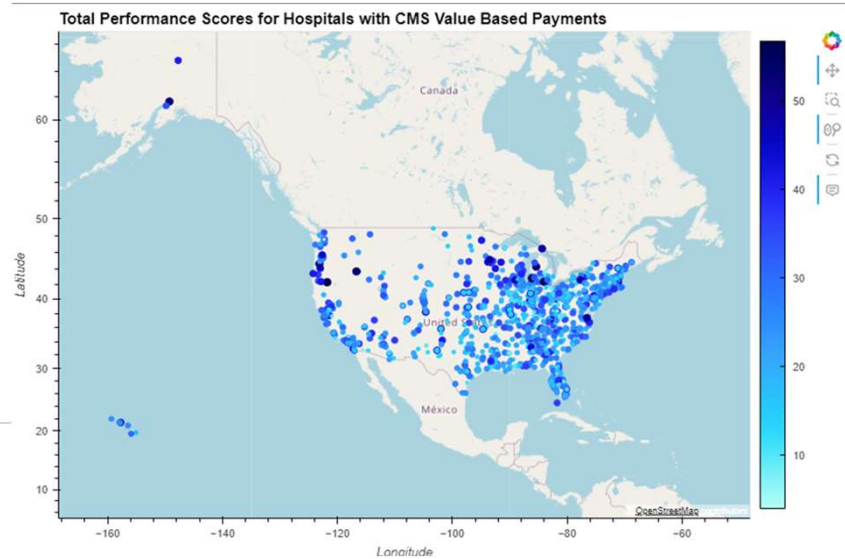
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Results



5

2) Based on the VBP score Where are the best hospitals in the United States?



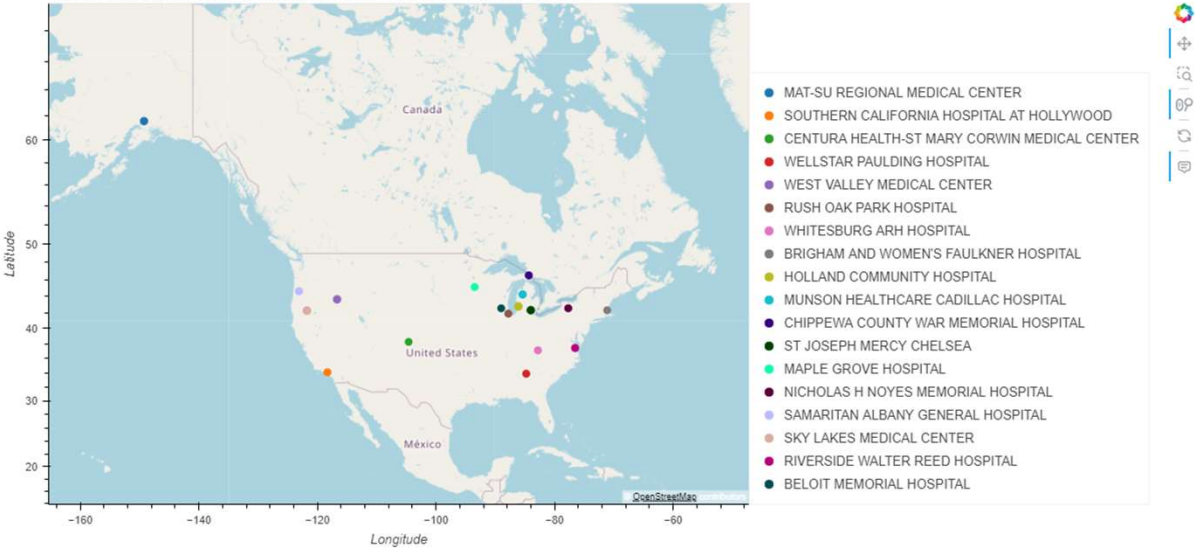
6

Top 25
Hospitals by
VBP Scores

Hospital Name	State	Total Performance Score	LATITUDE	LONGITUDE
SKY LAKES MEDICAL CENTER	OR	56.750000	42.253161	-121.785191
HOLLAND COMMUNITY HOSPITAL	MI	56.250000	42.774900	-86.114039
ST JOSEPH MERCY CHELSEA	MI	54.750000	42.310261	-84.015834
WEST VALLEY MEDICAL CENTER	ID	53.583333	43.654328	-116.694276
MAT-SU REGIONAL MEDICAL CENTER	AK	52.750000	61.562894	-149.258311
MUNSON HEALTHCARE CADILLAC HOSPITAL	MI	52.500000	44.245448	-85.389295
SAMARITAN ALBANY GENERAL HOSPITAL	OR	51.083333	44.631673	-123.116324
RIVERSIDE WALTER REED HOSPITAL	VA	49.500000	37.419817	-76.541776
WHITESBURG ARH HOSPITAL	KY	48.750000	37.112927	-82.812522
SOUTHERN CALIFORNIA HOSPITAL AT HOLLYWOOD	CA	48.750000	34.096391	-118.325235
CHIPPEWA COUNTY WAR MEMORIAL HOSPITAL	MI	48.625000	46.498081	-84.350551
MAPLE GROVE HOSPITAL	MN	47.750000	45.132889	-93.481213
NICHOLAS H NOYES MEMORIAL HOSPITAL	NY	47.750000	42.553025	-77.697771
WELLSTAR PAULDING HOSPITAL	GA	47.500000	33.900728	-84.780726
BRIGHAM AND WOMEN'S FAULKNER HOSPITAL	MA	47.250000	42.301500	-71.128300
RUSH OAK PARK HOSPITAL	IL	46.750000	41.878618	-87.803352
BELOIT MEMORIAL HOSPITAL	WI	46.125000	42.548298	-89.008432
CENTURA HEALTH-ST MARY CORWIN MEDICAL CENTER	CO	45.250000	38.233803	-104.622578

7

Top Performance Scores for Hospitals with CMS Value Based Payments



8

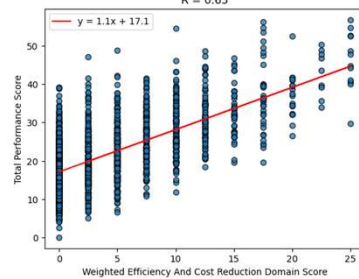
3) Are the variables of the VBP score correlated to the outcome score?

- Scatter Plot
- Line Regression
- Equation
- R-Value

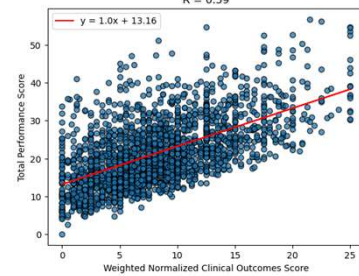
9

Results

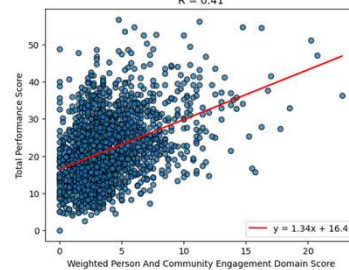
Hospital VBP Scores - Weighted Efficiency And Cost Reduction Domain Score vs. Total Performance
R = 0.65



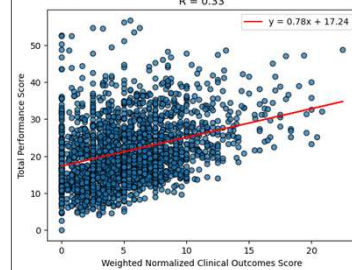
Hospital VBP Scores - Weighted Safety Domain Score vs. Total Performance
R = 0.59



Hospital VBP Scores - Weighted Person And Community Engagement Domain Score vs. Total Performance
R = 0.41



Hospital VBP Scores - Clinical Outcomes vs. Total Performance
R = 0.33



10

Results- “R” value, Correlation with Total Performance

- Efficiency and Cost Reduction (0.65)
- Safety (0.59)
- Person and Community Engagement (0.41)
- Clinical Outcomes (0.33)

11

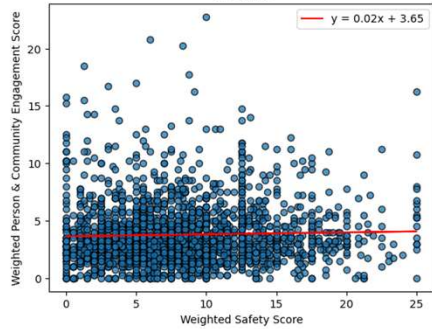
4) Is the Person and Community engagement variable related to the other variables on the VBP score?

- Scatter Plot
- Line Regression
- Equation
- R-Value

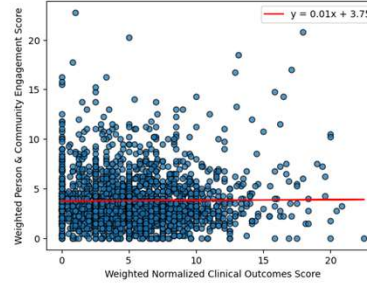
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Results: There is no observed correlation among the variables

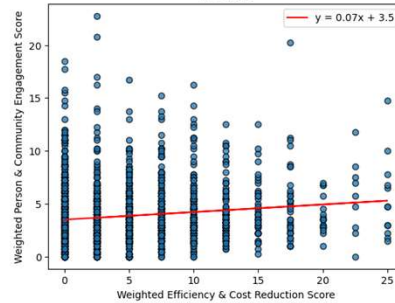
Hospital VBP Scores - Weighted Safety Domain Score vs. Person Engagement
R = 0.03



Hospital VBP Scores - Clinical Outcomes vs. Person Engagement
R = 0.01



Hospital VBP Scores - Weighted Efficiency And Cost Reduction Domain Score vs. Person Engagement
R = 0.14



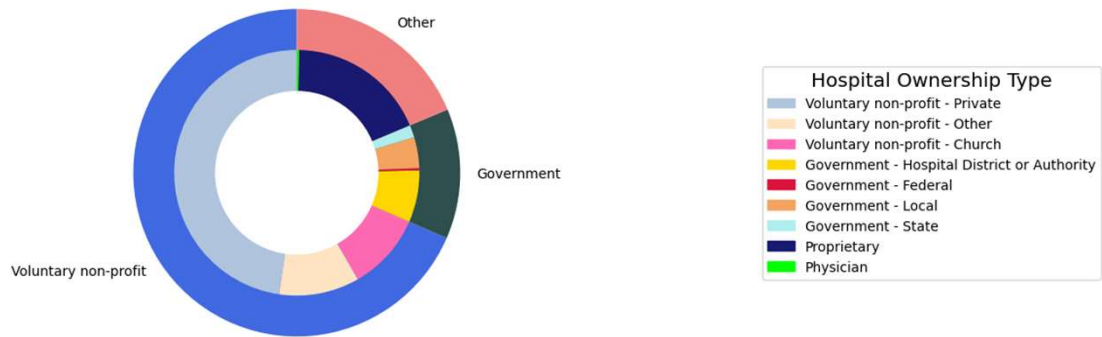
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5) How do the variables of the VBP score behave depending on the hospital's ownership?

- Groupby- Ownership
- Mean- Score for each category
- Plot- Donut Pie Chart
- Plot- Bar Graph

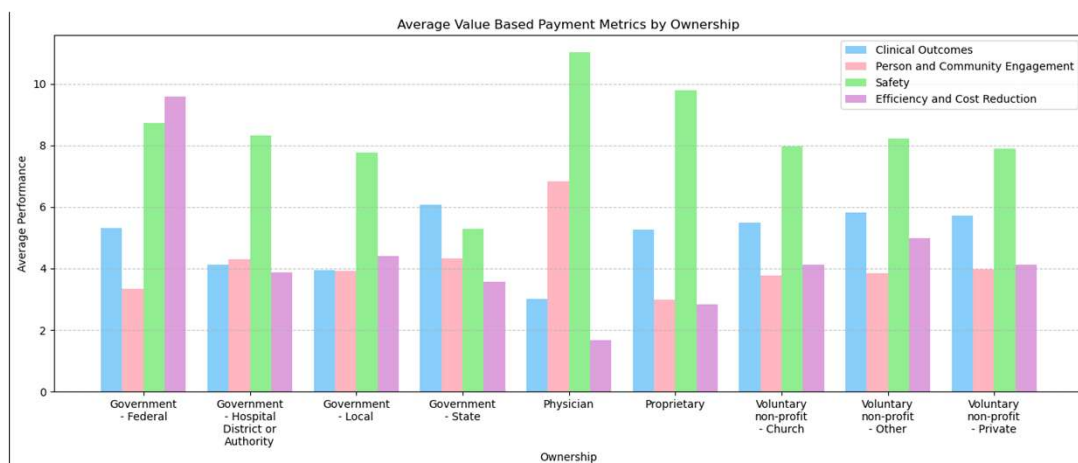
14

Results



15

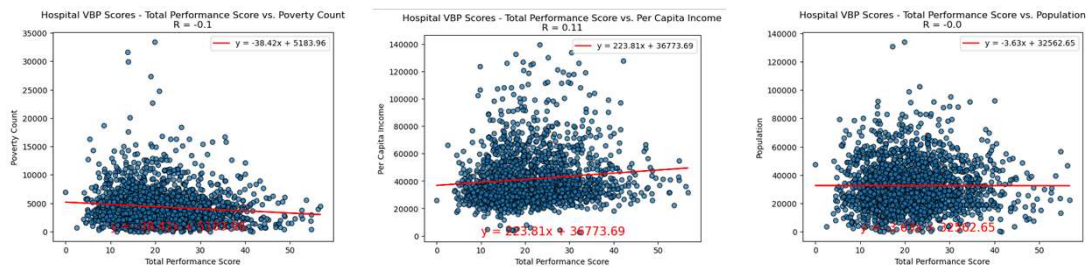
Results



16

6) Are state-census variables like the size of Population, the Per Capita Income and the poverty influencing the score of the VBP evaluated hospitals?

No direct correlation is evident in the graphs



17

Additional Analysis and Observations

- **Weighted and Unweighted Scores**
 - Results might be different with raw values
 - Other correlation Coefficients might have different results
- **Census**
 - Not all hospitals participated in data submission
 - Example- Maps had areas without data points and “NaN” listed for some hospitals
 - There could correlations with Census data outside of the hospitals with VBP participation.

18