BY YOHANNES DEBOCH

United States Medicare Data Visualization by Hospital Provider : Exploring overall health care By Spending Data

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General Introduction :

According to the definition provided by https://www.medicare.gov , Medicare is the federal health insurance program for people who are 65 or older, certain younger people with disabilities and people with End-Stage Renal Disease (permanent kidney failure requiring dialysis or a transplant, sometimes called ESRD). Having a clear visualization of Medicare data is relevant in identifying the available providers and help policy makers in decision making .

I want to show overall Status of Health Care by Hospital provider in a Dashboard. Using this dashboard, we can get overview of total number of medications prescribed in each state, most prescribed medications in each state, average cost of inpatient and outpatient treatment, common inpatient diagnostic conditions in USA hospitals etc.

 I'll choose important variables to show in the dashboard to get an overall health care status by period and claim type .

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Relevance of this Study to Current Health System

From https://www.rand.org/health-care/key-topics/health-policy.html we can see that USA has The Patient Protection and Affordable Care Act (ACA) since 2010. Getting an overview in the healthcare in dashboard will help us to understand how the policy aligns with the current situation of healthcare system and policy makers can take better decision about the old ACA policy and weather any new policy needed or not. We can see Medicaid, essential health benefits etc. from the dashboard which is a key part of the current policy. The convergence of big data, analytics, and transparency will bring a sea change to the world of health care by necessitating new ways to communicate information to end users, such as payers, providers, researchers, and consumers. If health care payers can analyze large amounts of claims data effectively, they can improve service and care delivery for their recipients.

Data Source and Description

Medical information per beneficiary data and data description was obtained from https://healthdata.gov/dataset/medicare-hospital-spending-claimThe data displayed here shows average spending levels during hospitals' Medicare Spending per Beneficiary (MSPB) episodes. An MSPB episode includes all Medicare Part A and Part B claims paid during the period from 3 days prior to a hospital admission through 30 days after discharge. These average Medicare payment amounts have

been price-standardized to remove the effect of geographic payment differences and add-on payments

for indirect medical education (IME) and disproportionate share hospitals (DSH).

Dataset Screenshot

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Hospital_Nam	Provider_IE	State	Period	Claim_Type	Avg_Spend	Avg_Spend	Avg_Spend	Percent_of	Percent_of_Spending_S	Percent_of_Spending_Nati	Start_Date	End_Date	
2	HELEN KELLEF	10019	AL	During Inde	Skilled Nurs	0	0	0	0.00%	0.00%	0.00%	1/1/2015	12/31/2015	
3	HELEN KELLEF	10019	AL	During Inde	Durable Me	18	31	24	0.10%	0.16%	0.12%	1/1/2015	12/31/2015	
4	HELEN KELLEF	10019	AL	During Inde	Carrier	1062	1480	1540	6.01%	7.71%	7.52%	1/1/2015	12/31/2015	
5	HELEN KELLEF	10019	AL	1 through :	Home Heal	917	948	816	5.19%	4.94%	3.98%	1/1/2015	12/31/2015	
6	HELEN KELLEF	10019	AL	1 through :	Hospice	172	154	122	0.97%	0.80%	0.60%	1/1/2015	12/31/2015	
7	HELEN KELLEF	10019	AL	1 through :	Inpatient	2518	2634	2702	14.25%	13.72%	13.18%	1/1/2015	12/31/2015	
8	HELEN KELLEF	10019	AL	1 through :	Outpatient	473	596	730	2.68%	3.10%	3.56%	1/1/2015	12/31/2015	
9	HELEN KELLEF	10019	AL	1 through :	Skilled Nurs	3544	2626	3319	20.06%	13.67%	16.19%	1/1/2015	12/31/2015	
10	HELEN KELLEF	10019	AL	1 through :	Durable Me	79	126	103	0.45%	0.66%	0.50%	1/1/2015	12/31/2015	
11	HELEN KELLEF	10019	AL	1 through :	Carrier	970	1046	1110	5.49%	5.45%	5.42%	1/1/2015	12/31/2015	
12	HELEN KELLEF	10019	AL	Complete E	Total	17668	19201	20497	100.00%	100.00%	100.00%	1/1/2015	12/31/2015	
13	DALE MEDICA	10021	AL	1 to 3 days	Home Heal	23	16	14	0.13%	0.08%	0.07%	1/1/2015	12/31/2015	
14	DALE MEDICA	10021	AL	1 to 3 days	Hospice	0	1	1	0.00%	0.01%	0.00%	1/1/2015	12/31/2015	
15	DALE MEDICA	10021	AL	1 to 3 days	Inpatient	12	6	5	0.07%	0.03%	0.03%	1/1/2015	12/31/2015	
16	DALE MEDICA	10021	AL	1 to 3 days	Outpatient	22	84	124	0.12%	0.44%	0.61%	1/1/2015	12/31/2015	
17	DALE MEDICA	10021	AL	1 to 3 days	Skilled Nurs	0	2	2	0.00%	0.01%	0.01%	1/1/2015	12/31/2015	
18	DALE MEDICA	10021	AL	1 to 3 days	Durable Me	10	10	9	0.06%	0.05%	0.04%	1/1/2015	12/31/2015	
19	DALE MEDICA	10021	AL	1 to 3 days	Carrier	398	508	552	2.25%	2.65%	2.69%	1/1/2015	12/31/2015	
20	DALE MEDICA	10021	AL	During Inde	Home Heal	0	0	0	0.00%	0.00%	0.00%	1/1/2015	12/31/2015	
21	DALE MEDICA	10021	AL	During Inde	Hospice	0	0	0	0.00%	0.00%	0.00%	1/1/2015	12/31/2015	
22	DALE MEDICA	10021	AL	During Inde	Inpatient	7529	8934	9324	42.64%	46.53%	45.49%	1/1/2015	12/31/2015	
23	DALE MEDICA	10021	AL	During Inde	Outpatient	0	0	0	0.00%	0.00%	0.00%	1/1/2015	12/31/2015	
24	DALE MEDICA	10021	AL	During Inde	Skilled Nurs	0	0	0	0.00%	0.00%	0.00%	1/1/2015	12/31/2015	
25	DALE MEDICA	10021	AL	During Inde	Durable Me	8	31	24	0.04%	0.16%	0.12%	1/1/2015	12/31/2015	
26	DALE MEDICA	10021	AL	During Inde	Carrier	846	1480	1540	4.79%	7.71%	7.52%	1/1/2015	12/31/2015	
27	DALE MEDICA	10021	AL	1 through :	Home Heal	886	948	816	5.02%	4.94%	3.98%	1/1/2015	12/31/2015	
28	DALE MEDICA	10021	AL	1 through :	Hospice	204	154	122	1.16%	0.80%	0.60%	1/1/2015	12/31/2015	
29	DALE MEDICA	10021	AL	1 through :	Inpatient	2719	2634	2702	15.40%	13.72%	13.18%	1/1/2015	12/31/2015	
30	DALE MEDICA	10021	AL	1 through :	Outpatient	374	596	730	2.12%	3.10%	3.56%	1/1/2015	12/31/2015	
31	DALE MEDICA	10021	AL	1 through :	Skilled Nurs	3676	2626	3319	20.82%	13.67%	16.19%	1/1/2015	12/31/2015	
32	DALE MEDICA	10021	AL	1 through :	Durable Me	50	126	103	0.28%	0.66%	0.50%	1/1/2015	12/31/2015	
33	DALE MEDICA	10021	AL	1 through :	Carrier	902	1046	1110	5.11%	5.45%	5.42%	1/1/2015	12/31/2015	
34	DALE MEDICA	10021	AL	Complete E	Total	17657	19201	20497	100.00%	100.00%	100.00%	1/1/2015	12/31/2015	
35	CHEROKEE MI	10022	AL	1 to 3 days	Home Heal	0	16	14	0.00%	0.08%	0.07%	1/1/2015	12/31/2015	

Medicare Hospital Spending by C

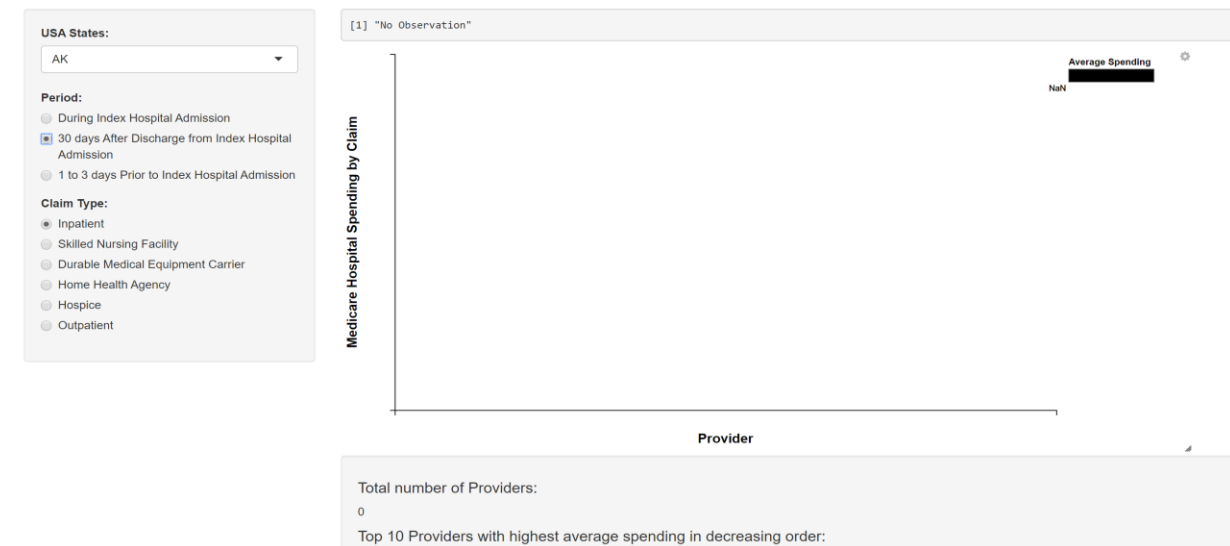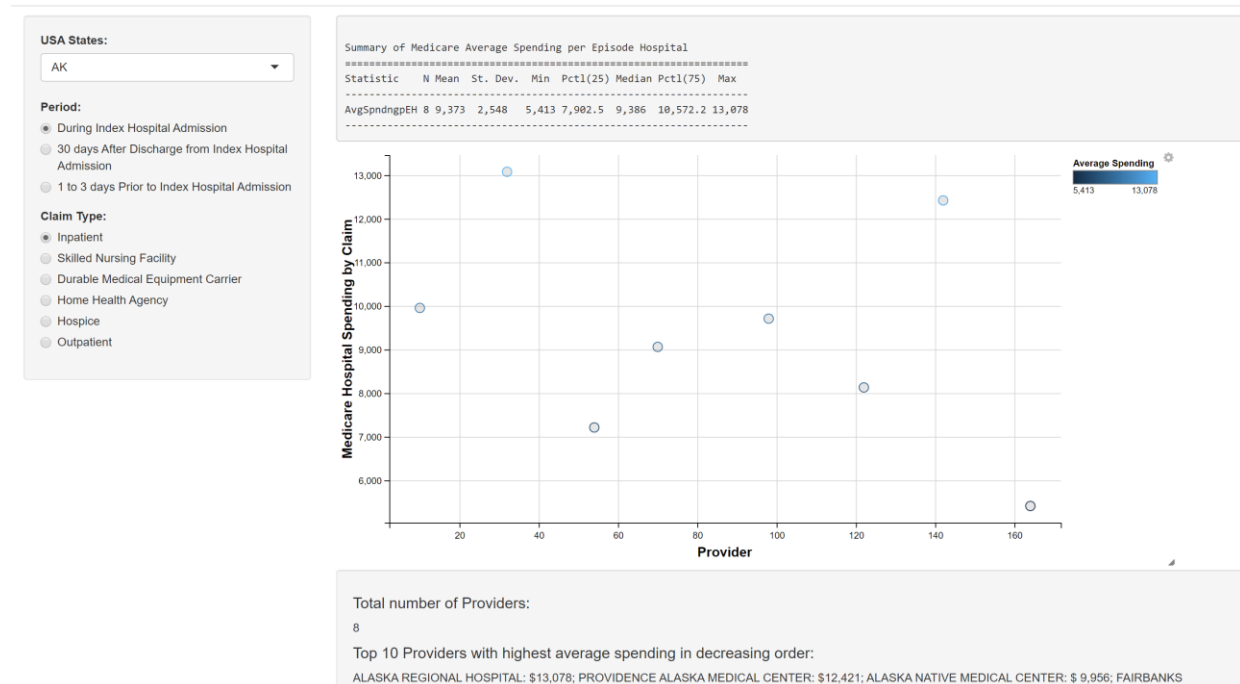## Interactive Visualization of the Data through Apps and its Purpose *

The aim of this dashboard is to explore the differences on average spending across providers by period and claim type within states. The average spending was compared across states in the following scatter plot helps to visualize Medicare average spending per episode among different providers. You can explore average spending within each state for a given period and type of claim by selecting the state from the drop-down box, and period and claim type from the radio buttons.

Summary statistics of average spending for a given selection is provided on the top of the application, followed by scatter plot of average spending. Provider with highest average spending are listed under the scatter plot. You can see the name of provider and the average spending by hovering the cursor on each observation.

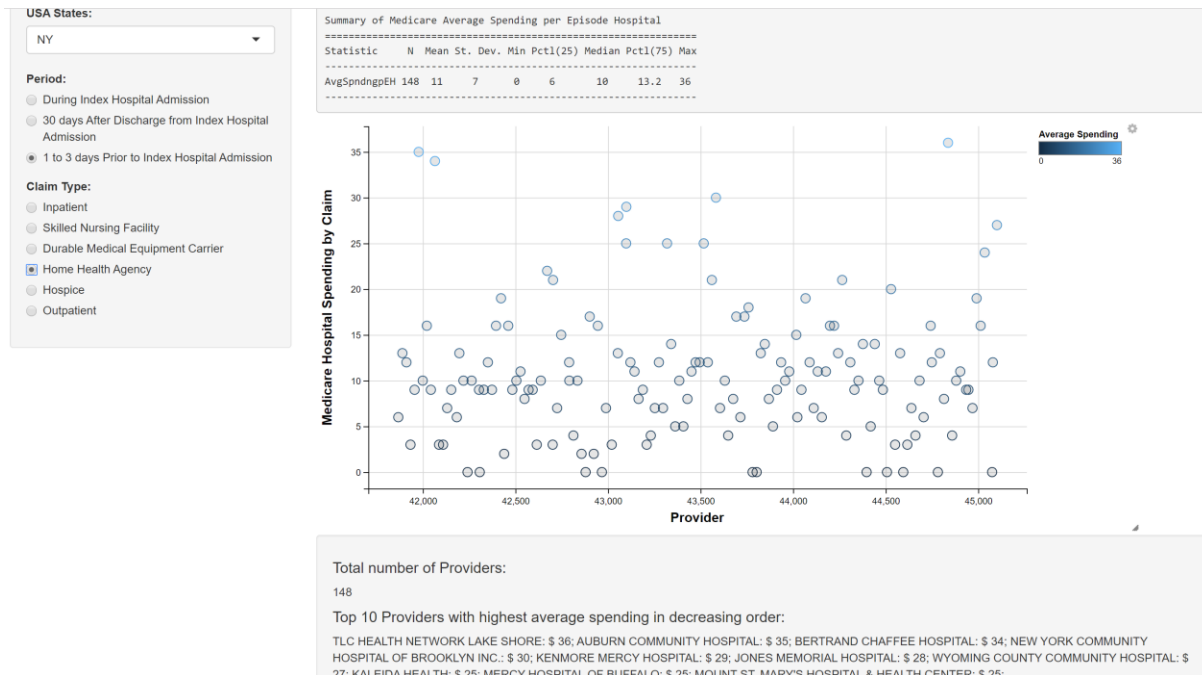Some Glimpse of the Interactive visualization is provided as follows :

USA States:

AK ▼

Period:
- ● During Index Hospital Admission
- ○ 30 days After Discharge from Index Hospital Admission
- ○ 1 to 3 days Prior to Index Hospital Admission

Claim Type:
- ● Inpatient
- ○ Skilled Nursing Facility
- ○ Durable Medical Equipment Carrier
- ○ Home Health Agency
- ○ Hospice
- ○ Outpatient

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Summary of Medicare Average Spending per Episode Hospital
==========================================================
Statistic    N Mean   St. Dev.  Min  Pctl(25) Median Pctl(75)  Max
------------------------------------------------------------------
AvgSpndngpEH 8 9,373  2,548    5,413 7,902.5  9,386  10,572.2 13,078
------------------------------------------------------------------
```


Total number of Providers:

8

Top 10 Providers with highest average spending in decreasing order:

ALASKA REGIONAL HOSPITAL: $13,078; PROVIDENCE ALASKA MEDICAL CENTER: $12,421; ALASKA NATIVE MEDICAL CENTER: $ 9,956; FAIRBANKS

USA States:

AK ▼

Period:
- ○ During Index Hospital Admission
- ◉ 30 days After Discharge from Index Hospital Admission
- ○ 1 to 3 days Prior to Index Hospital Admission

Claim Type:
- ● Inpatient
- ○ Skilled Nursing Facility
- ○ Durable Medical Equipment Carrier
- ○ Home Health Agency
- ○ Hospice
- ○ Outpatient

[1] "No Observation"

Total number of Providers:

0

Top 10 Providers with highest average spending in decreasing order:

In summary the top ten highest average spending was for inpatient claims during index hospital admission in the state of Texas (3 providers), Ohio, Nebraska, Indiana, Kansas (each 1 provider) and Oklahoma (2 provider).

NB: The Interactive data visualization published on shinny app can be found on :

https://yohannesdeboch.shinyapps.io/data608finalprojectbyyohannesd/

CUNY MSDS PROGRAM DATA 608 FINAL PROJECT

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