Reflection Paper

CMS Gov Dashboard

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1. Purpose and Function

Dashboard informs stakeholders of hospital metrics, patient demographics, and health trends. The data dictionary states that the Senior Vice President of Hospital Operations is responsible for developing new initiatives to improve patient outcomes based on observed trends. Dashboard allows them to see a quick overview of the most prevalent medical conditions among patients, their complication risks, and the services rendered to patients upon their initial hospitalization. The data dictionary also states that the SVP is interested in the broad categorization of patient treatments and outcomes as a function of demographics, and how these trends play out across regions. I addressed this need by including filters in a dashboard, allowing stakeholders to filter the data from a broad overview nationally and by region (Midwest, Northeast, South, and West) while allowing for a more in-depth investigation into specific states and counties. To ensure that I met all the needs of the SVP, I made the dashboard filterable by geographic location, patient demographics, and patient health data, including medical conditions

and treatments.

Regarding the Vice President of Research, I saw that a key focus of this VP is to oversee research initiatives to identify patterns in patient care. To meet the needs of the VP of Research, I ensure that patient demographics and health data, along with readmission status and hospital metrics, work in tandem to give the best possible overview of how each variable interacts with the others. I achieved this by including a patient status filter comparing not-readmitted and readmitted patients. When filtered by patient status, the VP will be able to see which treatments were performed most often on readmitted patients and the demographics of those patients. They will also be able to see how each treatment affected the readmission rates and hospital KPIs, along with the demographics of patients who received each treatment or have specific medical conditions. The last set of stakeholders, the Panel of Regional Vice Presidents, is responsible for executing policies and managing operations in conjunction with the SVP. I gathered that each Regional VP would be interested in seeing their region's performance and how it compares to the others and that of the nation. To best assist the Regional VPs, I ensured that the entire dashboard was filterable by region, state, and county. The two most powerful tools I included for Regional VPs were the Metrics Overview and the Geographic Analysis. The metrics overview allows all stakeholders to see the network's performance compared to the comparative metrics. It goes one step further by breaking down these key performance indicators (KPIs) by region and offering access to a network map where Regional VPs can dive deeper into their metrics to identify opportunities. A Regional VP can visualize their region using the map to determine the top and bottom-performing states.

2. Additional Data Sets

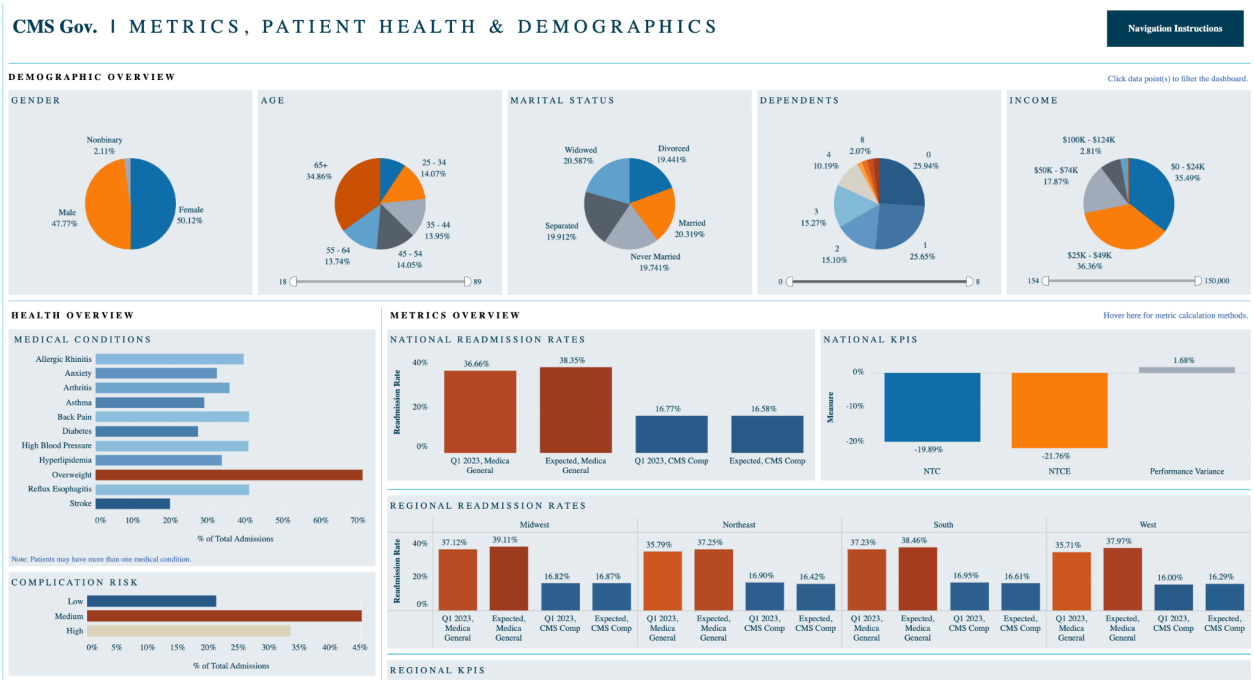
I pulled data from the Center for Medicare and Medicaid Services (CMS) Hospital Readmission Reduction Program (HRRP) to better understand the network's performance compared to other healthcare facilities. The HRRP data contains readmission rates and predictions for healthcare facilities nationwide. The facility's name, state, total discharges, readmissions, and expected readmission rate are included. Using this data, I gathered the readmission rates by state. After collecting the achieved and expected readmission rates, I could compare performance.

3. Decision-Making Aids

One of the dashboard's most valuable data representations is Geographic Analysis, combining the network map and counties. This representation allows leadership to identify areas of opportunity throughout the network clearly and empowers regional leaders to hone in on the counties most impacting the readmission rates. By having the ability to identify performance contributors at all depths, leaders can identify best practices from top-performing contributors and share them with opportunity areas. Additionally, by filtering the map using various filters, including health and demographic variables, leaders can identify the most vulnerable regions and strategize how to support them best. Another valuable asset on the dashboard is the Metrics Overview. This data representation gives leaders a broad overview of network performance compared to their expected and comparative performance. Using the Metrics Overview, leaders can analyze readmission rates and other KPIs for the nation and identify what variables impact them most.

4. Active Controls

Out of the multiple interactive controls in the dashboard, one of the most useful is the filter sidebar on the left. These filters allow you to focus on the data by patient status, region, state, and county. The image below shows how a Regional VP can leverage the filters to visualize each state's regional performance. The executive can then select a state and focus on the individual county's performance. When hovering over the state or county, a user can see specific data for the area, including the average population, totals for each type of admission, and other patient health statistics. The Demographic, Health, and Metrics overviews will also update to reflect the filtered data.



Another useful interactive feature in the dashboard is using actions to select data points on specific visualizations. When a user selects a data point on any visualization within the Demographic Overview, Health Overview, or Demographic Analysis, the rest of the dashboard

will update to reflect the filtered data on the dashboard. The image above shows how a user can use the button at the top left of the dashboard to toggle between the Metrics Overview and Geographic Analysis. Once users select a state, county, or both, they can toggle back to the Metrics Overview and see the Readmission Rate and relevant KPIs for the chosen areas.

5. Accessibility

There have been many studies on colorblind individuals and methods to ensure that I create helpful tools and products for all users. I took advantage of the Tableau colorblind color palette for categorical visualizations and used the orange-blue diverging palette for continuous visualizations to ensure I made the dashboard colorblind-friendly.

6. Data Representations and Storytelling

The presentation focused on two aspects of the data: patient health and demographics, and performance metrics. The Metrics Overview section of the dashboard was critical in conveying to the audience the performance metrics at a national and regional level. I compare the hospital network's readmission rate and the comparison in these visualizations, along with three KPIs, allowing us to better understand the relationship between the two metrics. The first KPI, NTC, measures the network's performance relative to the comparative. The second KPI, NTCE, measures the network's predicted performance, or performance goal, against the comparative's performance goal. The last KPI, the performance variance, compares the network's performance to its predicted performance. To concisely convey these metrics, I included the visualizations from the metrics overview in the presentation. The second aspect covered in the presentation is patient health and demographics, focused on the dashboard's Demographics and Health

overviews. The demographics for this part of the presentation were the most important. I extracted the most common aspects of the patient population from the gender, age, marital status, dependents, and income pie graphs to create the network's average patient profile.

7. Universal Access

To ensure presentation can be shared with executive leaders and other stakeholders, I included more business-specific jargon in recommendations and summarized key points from the data. As mentioned earlier, presentation consists of two themes: metrics and KPIs, and patient health and demographics. In the metrics overview, I took steps to break down how each KPI was calculated so that a broader audience could understand any abbreviations and what parts of the data played a role in arriving at their specific values. I also carried on the same colorblind palettes from the dashboard. I included alternate text for images in the presentation to ensure the presentation was also accessible to blind audience members who may be using text-to-speech.

8. Sources

Hospital Readmissions Reduction Program. Center for Medicare & Medicaid Services. (2023, January 17). Retrieved from https://data.cms.gov/provider-data/dataset/9n3s-kdb3