**PERFORMANCE ASSESSMENT**

**D210 – Representation and Reporting**

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D210 – Representation and Reporting

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**Part 1: Interactive Dashboard**

1. **Data sources:**
   1. WGU Medical Data Set: Medical\_clean.csv
   2. External data source: Data.NY.gov. Mental Health Readmission: Beginning 2014. <https://data.ny.gov/Human-Services/Mental-Health-Readmission-Beginning-2014/ke9m-imcz>
2. **Dashboard Access**:

To navigate to the dashboard, type the following web address into any browser address bar

(You can also hold the “Cntrl” key and click the link below to open directly from this document):

<https://public.tableau.com/app/profile/inigomontoya/viz/FauxHospitalDataonObesity/HospitalDataonPatientReadmissionforWesternGovernorsHealthcare?publish=yes>

1. **Dashboard Instructions:**

**“% Readmitted Patients by Region” map:**

* The color spectrum legend in the lower left corner reveals how the color gradient of the map corresponds to the percentage of patients readmitted per the four US regions.
* Hovering over each region will display information for that area. Click on the region to change other tiles in the dashboard to information for that region.
* When a region is clicked with the left mouse button, the states in the data map tile to the right that are in that region will be highlighted. The “Patient Survey Answers” at the bottom will change to only contain survey answers from that region. The “Services Administered to All Patients in Area” data tile will change to only data from that region.

**“% Readmitted Patients by State” map:**

* Like the previous map, the gradient color bar at the bottom reveals how the percentage of readmitted patients in each state corresponds to the colors of each state.
* Hovering the mouse over the map will automatically reveal an informational box with the state’s abbreviation and the actual percentage of patients readmitted in that state.
* Clicking on a state with the left mouse button will change the data in the “Services Administered to Patients” and “Patient Survey Answers” data tiles.
* Hold down “Cntrl” and left click on multiple states to reveal data for multiple states. This allows for multiple state selections within a region.
* An interactive box in the lower right of the map can be used to search or choose a state from a list by left clicking the mouse in the search box labeled “Highlight State”.

**“Readmission of New York Mental Health Patients”:**

This area is not interactive. It is an informational tile from the state of New York’s open data source Data.NY.gov. The data is open for research and education at no cost at the following link which is displayed at the bottom of the dashboard tile:

<https://data.ny.gov/Human-Services/Mental-Health-Readmission-Beginning-2014/ke9m-imcz>

The line graph reveals the percentage of readmitted mental health patients from 2014-2019 in hospitals in New York. It can be used to compare the percentage of New York mental health patients against data from hospitals in the internal data.

**“Services Administered to Patients”:**

This tile is a count on services administered for all patients, both initial and readmits, that changes with the chosen areas on the maps above. When no area is chosen, the entire data set is used.

**“Patient Survey Answers”:**

This tile shows the answers (8 being the least important and 1 being most important) to a survey taken by patients in the data set. The data is separated by gender for even more insight.

**Part II: Storytelling with Data:**

Panapto Video Link:

<https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=ec2b715f-0529-40d0-ba74-ae84017e0981>

**Part III: Reflection Paper**

1. The task given in the data dictionary “to investigate the extent to which readmission is a problem for this chain of hospitals… to build a data dashboard to enable executive leaders to explore the data, identify trends, and compare key metrics”. All visualizations in the dashboard are controlled by two maps, which reveal statistics on patient readmission rates. The external data from mental patients of New York gives insight to how the internal data compares to readmission patients outside of the organization.

The Senior Vice President (SVP) represents all locations, so the map was not limited to one region or state. The dashboard allows the vice president to interactively explore all states and geographical regions where the company has hospitals. The SVP is interested in patient treatments and the outcomes of those treatments, so the tile for “Services Administered to Patients” was added, and the interactive map allows the SVP to have insight into how the balance of services administered compares to the readmission rates for each state or region. The survey answer results are separated by gender, and the SVP can choose a state or region and see how survey results differed by region and by gender at the same time.

The “Patient Survey Answers” tile was specifically chosen for the Vice President of Research (VP) who is looking to identify patterns in patient care. The VP can also refer to the “Services Administered to Patients” visual to identify the trend in services administered by region or state. Regional VPs can separate the data with the click of a mouse to report findings on their specific region.

1. The data from Data.NY.gov represents data from all hospitals across New York state for the percentage of mental health patients readmitted to the hospital within 30 or 90 days. The 30-day readmission rate for most years is very close to the readmission rates across the board in the internal data, except for a spike in 2018. This information is representative of all hospitals in the state. The executives can compare the internal results to the results across the state. If they discover a similar spike in 2018, or if rates seem to be very similar to the internal data, they may choose to start collecting data on mental health to add to the internal data set.
2. The “Patient Survey Answers” visualization reveals responses to questions regarding staff and treatment. Interestingly, the ratio of gender changes when the region or state changes, and the skew of the answers changes by state and region chosen Executives can compare regions and states to see what areas need attention according to the answers patients gave to the survey questions.

The ”Services Administered to Patients” tile allows executives to see what services are more common per region or state. When compared to readmission rates given on the map visualizations, executives can make decisions on whether different services are affecting readmission rates. They can also compare the variation in services to the answers to the survey questions. A good example of how this visualization can be used is selecting Kentucky vs Michigan. The “Intravenous” service increases disproportionately from other services from Kentucky to Michigan. Michigan also has a much higher readmission rate. Utah has a much higher CT scan count than Kentucky, but the readmission rate is close to the same. Both visualizations will help the executives make insightful decisions.

1. The “% Readmitted Patients by Region” visualization allows the executives to left mouse click on a region to reveal the readmission rate for that region, change the data in the services administered visualization, and change the data in the patient survey answers visualization. Left clicking the mouse on a region also changes the “% Readmitted Patients by State” map to highlight all states included in the region.

Similarly, the “% Readmitted by State” visualization allows the users to hover over a state to see the readmission rate and state abbreviation. Left clicking on a state will change the regional visualization to only highlight the region that state is in. Just like the regional map, the data for services administered and the patient survey answers is limited to the highlighted state. Holding down the “Cntrl” key and clicking multiple states allows the user to select multiple states within a region.

1. To accommodate colorblind users, shading was used rather than color. Colors were used from the “Colorblind” color selection in Tableau. Two different colorblind test subjects were consulted to verify the dashboard was easily understandable.
2. The main objective was to reveal readmission rates by region and state and show how they relate to hospital services and treatments. The interactive maps were easily influenced by denser populations, so it was important to show the rate of readmissions within the individual regions and states rather than a count of total readmissions in those area. This allowed all areas to be compared on the same scale. The two map visualizations named “% Readmitted by Region” and “% Readmitted Patients by State” help tell the story the best. The Midwest and South US regions have a higher readmission rate than North or West Regions. Some states stand out as having a much higher than average readmission rate and others stand out for having a much lower than average readmission rate. The labels on “% Readmitted by Region” give quick insight into precisely how each region stacks up against the others. Beyond the maps themselves, the way they interact with the remaining visualizations is crucial in telling the story.
3. The audience included the Senior Vice President, who oversees all regions. The dashboard was not limited to focus on one state or region. The task was to find insights into patient readmissions, so the focus was kept on readmissions by region. The executives want to know how the hospital’s staff and procedures affect readmission, so the variables that contributed the most to this information were the patient survey results and the services the hospital administered. Adding in information like patient conditions, income, or hospital charges would not have helped executives make decisions on services and treatments, so those variables were excluded. The external data, “Readmission of New York Mental Health Patients” was used to help executives compare the readmission rates for multiple years to the readmission rates of internal data. The data dictionary gave insights into what the audience required, including regional data on readmission rates, data specific to services, treatment and staff. Only data that gave insight into these requirements was used.
4. Both the video presentation and the dashboard are easily accessible using a web link for each. No special software is required to view either. The user only needs to know the correct web address, and the dashboard can be viewed on any desktop as well as any mobile device easily. Phones, tablets and computers connected to the internet all allow access to interact with the data through the dashboard or to watch the video presentation. The dashboard can also be downloaded to take on devices when no access to internet is available as an image, PDF file, PowerPoint or even a Tableau file if the user chooses to download the software. Free versions of tableau and Tableau viewer are easily available to the public should the choose to work further with the data.
5. First, the presentation followed the flow of effective story telling. The background information was presented to set up the story. The problem of readmission rates and how they effect patients was presented. The insights for the data were given and then a call to action for a solution was presented.

Second, I found what I was passionate about in the data (Knaflic, 2015). I have grown up around healthcare workers my entire life, and I plan to use my skills in data analysis in the healthcare field. I am passionate about the subject of reducing costs and fines to hospitals so they can give more affordable healthcare and afford better equipment and more staff. I relate to the needs of my audience and can connect by letting them know that the insights they need are something I am passionate to find.

**References**

Knaflic, Cole Nussbaumer. November 2nd, 2015. *Storytelling with Data : A Visualization Guide for Business Proffesionals*. <https://ebookcentral.proquest.com/lib/westerngovernors-ebooks/detail.action?docID=4187267>

The New York State Office of Mental Health, Office of Performance Measurement and Evaluation (OPME). July 12th, 2021. *Mental Health Readmission: Beginning 2014.* <https://data.ny.gov/Human-Services/Mental-Health-Readmission-Beginning-2014/ke9m-imcz>