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PERFORMANCE ASSESSMENT

D210 TABLEAU TASK

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Part I: Interactive Data Dashboard

A. Tableau Dashboard

1) Both data sets are included in the task submission, along with the tableau workbook. I used the medical data set provided by WGU and found a secondary data set from Kaggle. See the sources section of this paper for reference to the Kaggle dataset.
2) Step-by-step dashboard installation instructions:
    a. Download Tableau desktop.
    b. Then download the packaged tableau workbook named "D210 Tableau".
    c. After the download finishes, double-click the file or right-click and select "open with" and choose Tableau desktop.
    d. Tableau desktop should open automatically, and the dashboard and associated worksheets should be visible to the user.
3) Instructions for navigating the "D210 Tableau" dashboard:
    a. After opening the tableau workbook as instructed above, navigate to the tab at the bottom named " Hospital Readmission Comparison".
    b. On the left-hand side, you will see WGU hospital information, and on the right Kaggle hospital information.
    c. Clicking on any of the categories will automatically filter results based on your selection. For example, if you click on Observation Admission under WGU initial admissions, you will see each of the WGU worksheets automatically adjust to corresponding readmission numbers. The same goes for Kaggle Hospital.
    d. De-selecting the category you chose will reset the dashboard to default.

Part II: Storytelling with Data

B. Panopto Video Link

1) Please navigate to this Panopto video link for a presentation of the WGU vs. Kaggle hospital readmission comparison. A link is also attached to the submission of this performance assessment.

Part III: Reflection Paper

C. Data Representation and Reporting

1) Hospital readmissions are concerning for hospital organization executives. Hospitals that see excessive readmissions are at risk for penalties and fines from the Centers for Medicare and Medicaid Services. For example, in 2017 imposed fines by the CMS for hospital readmissions equated to over half a billion dollars (Upadhyay et al. 2019). Furthermore, according to the data dictionary for the medical data set provided by WGU, as much as 78% of hospitals were fined in fiscal year 2015. Therefore, my tableau dashboard aligns with the needs of the WGU hospital data set by providing statistical visualizations for readmission rates with correlation to patient's initial admission types. This can help the hospital anticipate or predict patients at high risk for readmission and implement care measures to reduce readmission after initial discharge from the hospital.
2) The dashboard also provides a comparison of readmissions at another hospital from a Kaggle dataset. The information housed in that dataset consists of specific procedures/conditions and those patients from each category that got readmitted. The data contains 10000 records for patients treated at hospital with comprehensive data on patient case, treatment, and outcomes (Anand 2024). This can highlight some medical conditions that have a high readmission risk and help executives implement core measures and polices that place emphasis on reducing readmission for those patients. In all, both of these visual representations can provide insight into how executives can avoid CMS penalties and fines.
3) For WGU hospitals, executives can use the interactive dashboard to gain insight into how many readmissions occur based on a patient's initial admission status. For example, by clicking on emergency admission in the pie chart for WGU, executives would see the bar graph for readmissions updates and show that for this initial admission category, 37.63% of those patients are readmitted to the hospital after initial discharge. With this information, executives can focus their attention on these emergently admitted patients and what caused the initial admission. Policies or core measures could then be implemented that could improve the patient's initial care and reduce readmission rates.

For Kaggle hospitals, executives can interact with the dashboard to see which specific medical conditions/procedures are at higher risk for readmission. For example, by clicking on the yes category in the readmission worksheet, executives would be able to see those patients with appendicitis, cancer, diabetes, fractured arm, heart attack, heart disease, and strokes are at higher risk for readmission to the hospital. This could allow executive leaders to implement quality improvement policies that improve the outcome for these types of patients and reduce the risk of readmission.

4) For this dashboard, I included additional interactive controls that can allow executives to narrow the results based on gender, for Kaggle hospitals, and complication risk for WGU hospitals. For the Kaggle data, I created a floating gender filter that is placed in the bar chart for Kaggle readmissions. This makes it easy to find and filter the data based on gender. Selecting male or female will allow executives to see which genders are at higher risk of readmission based on the specific procedure/conditions.

   For the WGU data, I created a floating complication risk filter that is placed next to the pie chart for WGU initial admission types. Again, this makes the filter easy to locate and interact with by filtering the results based on patient complication risks. The complication risk options are low, medium, or high and allow executives to filter results to see which patient risks have higher readmission rates.

5) The hospital readmission comparison dashboard does not need color options at all for interpretation, rather they improve the overall appearance for aesthetics. For those individuals with color blindness, the dashboard can be easily interpreted because it includes text, numbers, and tooltips when hovering over each category. In addition, when selecting the yes or no categories under the Kaggle data sources and the initial admission categories under the WGU pie chart, the size of the bar graphs changes and can allow users to see which categories contain more results than others.

6) The story I would like to convey is that the more emergent a patient's medical condition, the more likely they are to become readmitted. This may also be

relative to their initial admission status, where a condition that is more acute or has a higher complication risk is more likely to require hospital admission and become subject to future complications that require readmission. One data metric, from the WGU medical data, that helps me convey this suggestion is the pie chart I created for the initial admission status of patients, along with the addition of the complication risk filter. By selecting high complication risk and emergency admission, I can show the executives that these patients are at higher risk of readmission to the hospital, with over 50% of these patients getting readmitted. From the Kaggle medical data set, the metric that allows me to further support my story is the readmission bar graph. By selecting the yes category for readmission, I can produce a visual for specific medical procedures and conditions that have a higher risk for readmission. Patients experiencing appendicitis, cancer, diabetes, fractured arms, heart attacks, heart disease, and strokes all have higher rates of readmission and can help hospital executives focus on the treatment measures that reduce readmission rates.

7) By determining what the audience (hospital executives) roles are, I could produce a dashboard that helps me tell a story based on the needs of the organization. My role is to identify the key interests for each stakeholder.

   As stated in the provided medical dictionary for D210, the Senior Vice President of hospital operations (SVP) is responsible for patient outcomes and develops new initiatives to improve patient care. The SVP is also interested in the categorization of patient treatments and the trends in those patient treatments per hospital region.

   The Vice President of Research (VP) has a key responsibility in overseeing research initiatives that help identify patterns in patient care. The VP drives improvements in patient outcomes from their research and implements strategic initiatives that improve patient outcomes.

   The Regional VPs are responsible for executing the policies set forth by the VP of research and the SVP within their regions.

   In this case, understanding readmission rates is of significance to the SVP as it not only improves revenue, but prevents fines and penalties by the CMS. In

addition, presenting this information to the SVP allows them to develop initiatives that can improve patient outcomes and thus reduce the chances of hospital readmission. Understanding the trends for specific categories of patient treatments can help the SVP determine which initiatives are in the best interest for those patients and provide insight for the VP of research to identify patterns in patient care that drive improvement in readmission reduction for strategic initiatives set forth by the SVP. These initiatives can then be put into action by the Regional VPs at each hospital.

8) Making the dashboard user-friendly allows anyone to easily understand what information is trying to be conveyed. Just like making the dashboard useable by those with colorblindness, implementing additional labeling, interactive filters, and key statistics, make it so the data is easy to understand. This helps eliminate the potential for any confusion when accessing the dashboard. Exporting the dashboard into a tableau workbook file makes it so that any user that has the tableau software can easily open the packaged workbook and view the dashboard. In addition, the packaged workbook can be uploaded to tableau public so that anyone can search and access the information.
9) One element that I used for effective storytelling was ensuring that I reiterated the goals and needs of the stakeholders, and hospital executives. The goals are to reduce hospital readmission and determine the patients who are at the most risk for hospital readmission. Furthermore, after identifying those patients, I can emphasize that hospital executives look at those metrics for implementing policies and core measures that improve patient care and help prevent readmission. Another effective element for storytelling is to highlight the main points of the dashboard by outlining the results from my analysis which can help hospital executives figure out which patient populations are seeing the most hospital readmissions. In addition, by also mentioning some of the statistics for penalties by the Center for Medicare and Medicaid Services, I can bring to light the significance of my findings in relation to the finances and reputation of the hospital.

D. Sources

Anand, A. (2024, February 2). Hospital patient records dataset. Kaggle. https://www.kaggle.com/datasets/blueblushed/hospital-dataset-for-practice?resource=download

Upadhyay, S., Stephenson, A. L., & Smith, D. G. (2019). Readmission Rates and Their Impact on Hospital Financial Performance: A Study of Washington Hospitals. Inquiry: a journal of medical care organization, provision, and financing, 56, 46958019860386. https://doi.org/10.1177/0046958019860386