WGU MSDA Program

Tableau Dashboard on Hospital System Data

Write Up

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**Part I: Interactive Data Dashboard**

1. The Tableau dashboard can be found here: <https://public.tableau.com/views/KamperD210PerformanceAssessmentTask1Workbook/D210Story?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link>
   1. The data sets used were the attached medical data set provided by WGU and the second is the SAIPE State and County Estimates for 2021 (US Census Bureau).
   2. Installation Instructions for the dashboard:
      1. Click the link here to open the dashboard: <https://public.tableau.com/views/KamperD210PerformanceAssessmentTask1Workbook/D210Story?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link>
   3. Instructions for using the dashboard:
      1. Once the dashboard presentation is open, navigate to the “Who are our patients” page.
      2. The three visuals are all interactive and clicking on a state, or gender will update the visuals based on that selection.
      3. There are filters to the right where a selection of top “N” states by total patient count can be selected. Once a value is selected, the map visual will update based on that selection. The same will happen with a specific state selected.
      4. Hovering over the “Patient Income” visual will show the median income values for both the patients in the medical data set and the census values.
      5. Hovering over a specific state on the map will give a tooltip showing further details such as actual patient count, the median income of patients in that state, and the breakdown of the areas.
      6. Navigate to the “Readmissions” page.
      7. The three visuals are interactive and clicking on a state or readmission value will update the visuals based on that selection.
      8. There are filters to the right where a selection of top “N” states by total of readmitted patients can be selected. Once a value is selected, the map visual will update based on that selection. It will also update the list visual highlighting the N value of states. The same will happen with a specific state selected.
      9. Hovering over a specific state on the map will give a tooltip showing the total number of readmitted patients and a breakdown of the percentage for that state. The same information is also available from the map visual.
      10. Navigate to the “Survey & Charges” page.
      11. The four visuals are all interactive and clicking on the survey topic, charges trend line, admission type, or service type will update the visuals based on that selection.
      12. There is a filter to the right where a selection of state can be made. This will update the “Survey Responses” visual.
      13. Hovering over each Survey topic will show the average ranking for that topic. This is also true for all other visuals and their related values.
      14. Navigate to the “Insights & Recommendations” page.
      15. Review the insights and recommendations given based on the analysis.

**Part 2: Storytelling with Data**

1. Panopto video is attached and can be found here: <https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=5bcd490a-97a8-43f2-9493-b053000a8ca3>

**Part VI: Demonstration**

* 1. This dashboard has been built for the purpose of reviewing details regarding patients for this hospital chain that has identified a readmission problem.  The visuals, filters, and presented data all show relationships between data points and help tell the story throughout the presentation that leads to the insights.
  2. The additional data set includes data about the median household incomes for each data based on the US 2021 Census data.  This is helpful as it allows for the provided incomes from the medical data to be compared against a larger population.  This is important as it adds context for the income levels reported in the medical data set and could help show a relationship the income variable could have on readmittance.
  3. Executives could use this dashboard to make decisions based on multiple variables. For example, the map on the ReAdmittance dashboard could be selected to tell them the 5 locations to start focusing on to try to lower the readmittance rates. It would tell them which 5 have the most readmitted patients.

The trendline on the Survey & Charges dashboard can tell them what the expected charges are based on the time a patient is admitted for. This could help determine if this meets the financial needs of the hospital and decide if steps need to be taken to modify.

* 1. One of the interactive controls in this dashboard is the Top N filter on the Readmissions page which allows a user to select the number of locations they would like to see based on the ranks of each state regarding readmission. This will filter both the map view and the list to highlight the states of interest.

A second interactive control is the active filtering on each visualization. For example, a user can select a state on the map from the "Who are our patients?" page and it will apply that state filter to the Income list and the Initial Admin chart above.

* 1. Colorblind users have been considered as the visualizations have colors that could still show the difference between values even if the intended color is not visible.  There are also borders and text values on each visualization to help ensure this is understandable even without the colors being fully present. (“5 Tips on Designing Colorblind-Friendly Visualizations”)
  2. The “Who are our patients” dashboard is important to the story here as it gives a context of the financial status of the patients. The goal is for users to understand that this could help determine causes of the higher levels of readmittance. The “Patient Income” visual clearly shows that the median income of the patients is lower than the median income of the state.

On the “Readmissions” page, the map supports the recommendation of looking at readmittance levels at a state level. The top N filter along with the overall counts and percentage breakdown gives the user context to compare where the attention should be focused. This is important to the story as it explains a method that would allow for further research towards a solution to the main problem.

* 1. The audience is a mixed group of executives and peer analysts. The dashboard has been designed to give a quick high-level review briefly, with further details if needed on options like tool tips. The expectation is the executives can digest the information quickly without extra details but can dig in and find more if needed. The added details will provide the other analysts with these extra details and the presentation will include a deeper dive into how the data was brought together since the executives will not be attending.
  2. The presentation has been designed to ensure that any party utilizing it can understand and use all the features. The dashboards are grouped together with visualizations that are related and all filter selections update the others as needed. There are keys and instructions for how to utilize the filters along with explanations for some of the visualizations that needed clarification. There is a flow to how the data is presented, and the Insights & Recommendations follow the order, so it is easy to go along with.
  3. During the presentation, scenarios were used to help engage the audience the have them relate. While reviewing the median income of patients against the census data, it is seen that there is a trend of patients having lower incomes. A scenario is presented to the audience to think about if their overall health habits would be better with a higher income. It gets them engaged in the message while relating to what is being explained.

The map that shows the readmittance in each state is used to show examples of how decision makers could use the information provided to determine the route they would like to take to further research a solution. The interactive map allows for it to be shown a comparison of how a selection of reviewing based on the states with the most readmitted patients is an option but also looking at states with the highest rates based on the readmittance and population. (“Weave a Story Together - Learning Data Science: Tell Stories with Data Video Tutorial | LinkedIn Learning, Formerly Lynda.com”)

1. Here are the sources used in this analysis:

“5 Tips on Designing Colorblind-Friendly Visualizations.” *Tableau*, 2016, www.tableau.com/blog/examining-data-viz-rules-dont-use-red-green-together. Accessed 2 Aug. 2023.

US Census Bureau. “SAIPE State and County Estimates for 2021.” *Census.gov*, 15 Dec. 2022, www.census.gov/data/datasets/2021/demo/saipe/2021-state-and-county.html. Accessed 2 Aug. 2023.

“Weave a Story Together - Learning Data Science: Tell Stories with Data Video Tutorial | LinkedIn Learning, Formerly Lynda.com.” *LinkedIn*, www.linkedin.com/learning/learning-data-science-tell-stories-with-data/weave-a-story-together?u=2045532. Accessed 2 Aug. 2023.