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D210 PA

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## A: Interactive Data Dashboard

*Dashboard File Included:* D210PA.twbx

*Tableau Public Link:* https://public.tableau.com/app/profile/shawn.wheeler/viz/D210PA\_17169464380240/Story1

## A1: Data Sets

*Internal Data Set:* clean\_medical.csv

*External Data Set:* externaldata.csv(Kaggle, 2024)

## A2: Installation Instructions

In order to view the Tableau workbook file, Tableau Public must be downloaded and installed. Instructions for how to go about downloading Tableau Public, installing the program, and, finally, opening the file are below.

1. Open your preferred, updated web browser (e.g. Google Chrome, Mozilla Firefox, or Microsoft Edge).
2. Navigate to <https://www.tableau.com/products/public/download> in the opened web browser.
3. Click on the button that says “Download Tableau Public”

A screenshot of a computer

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1. If you are not logged into a Tableau account, you’ll need to fill out the form that appears once the button is clicked. After all fields are filled in, click the “Download the App” buttonA screenshot of a computer screen

   Description automatically generated
2. If the download does not begin automatically, a prompt will appear which allows you to click the operating system you are using (Windows or Mac) to begin the download.

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Description automatically generated

1. After the download is competed, navigate to the folder where your file downloaded.
2. Double click on the Tableau Public installation file that you downloaded

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1. Follow the installation prompts and complete the installation process.

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Description automatically generated

1. Open the newly installed Tableau Public program on your computer.
2. In the top-left corner of the Tableau Public screen, click on File and then Open.

A screenshot of a computer

Description automatically generated

1. Navigate to where the workbook file is located, select it, then click Open in the navigation window.

Alternatively, the dashboard can be viewed online with the instructions below.

1. Open your preferred, updated web browser
2. Navigate to: https://public.tableau.com/app/profile/shawn.wheeler/viz/D210PA\_17169464380240/Story1

## A3: Navigation Instructions

*Intro / Purpose:*

The first page of the dashboard is a summary of the tabs to come. The top row shows the individual dashboards which can be selected by clicking on them. In this case, the default order is the suggested viewing order and also the order they are listed here.

*Determining Problem Areas:*

The second tab shows maps and bar charts from both data sets. The maps show readmission data by state for each data set and are visually darker for states that have a higher value like a heatmap. The bar charts in the middle of the maps are the values for each individual state and data set’s readmission numbers and a visual, size comparison between them. The top map and bar chart are for the internal medical data set while the lower map and bar chart are for the external data set.

The states within the bar chart for either map can be selected to highlight the relevant data for all graphs. Beside each map there is slider that can be manipulated to highlight or hide states based on the count of readmission for that state. This also works for both sets of data. There is also a visible count underneath the slider that shows the readmission count for the selected state.

*Data and KPIs:*

Next is the Data and KPIs dashboard. This shows two charts of KPIs with data from both data sets. The first chart of KPIs, “Blended KPIs ReAdmis”, shows readmission rates from the internal and external data sets, average income for both, average total charges for both, and average initial days of hospital admission from the internal data set. Secondly, “Blended KPIs Assorted” shows another group of KPIs from both data sets sorted by Gender. It includes gender counts from each data set, average BMI from the external data set, average children from both data sets, and average age from both data sets.

*Determine Correlations in Data:*

Fourthly, this dashboard shows two scatterplots. The top scatterplot, “Internal ReAdmis Scatterplot,” shows a comparison of days of the initial hospital stay, total charge, and readmissions. These values are all from the internal medical data set. The lower, second scatterplot, “External ReAdmis Scatterplot,” compares total charges, BMI, and readmission data from the external data set.

Both scatterplots are organized by color with orange being “Yes” for ReAdmis and blue being “No” for ReAdmis. They also include trend lines to better show possible correlations. Lastly, the top graph has a slider for initial days that allows one to zoom into specific sections. The bottom scatterplot also includes a slider but for BMI. This again allows for closer examination of value ranges on the graph.

*Form an Action Plan:*

Finally, this dashboard merely shows a summary of recommendations based on the data and graphs shown previously. This is the end of the story.

## B: Panopto Storytelling with Data

*Panopto Link: https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=a636c3c8-7937-44a5-bef9-b17f01008eca*

## C1: Dashboard Alignment

Readmission rates are being requested to be lowered due to financial considerations. Gaining further insight into the causes of readmission is paramount. Using two data sets related to medical information allows for greater understanding than only one data set or the other. The purpose of the story is to allow for different ways to view readmission data and its possible correlations and to discover actionable insight. The function of the included graphs and charts are to show possible considerations for ways to lower readmission or targets to focus on.

## C2: Additional Data Set Insights

The additional data set includes a decent amount of comparable data, including costs, demographic information, and readmission information, to the original medical data set. That provides a larger group to pull data from which enhances the quality of data. Also, it includes variables that may have correlation worth further investigation, such as BMI, as it appears to have a correlation to total charges which is shown to have a correlation to readmission in the top scatterplot. Therefore, the data only furthers to help develop actionable insight.

## C3: Decision-Making Support

There are two primary considerations shown in this project that support decision making: the states which have the highest and lowest amounts of readmissions via maps and bar charts, and scatterplots that show that there are possible correlations in readmission data from both data sets.

The maps and charts in the Determining Problem Areas dashboard allow for quick, easy visibility of problem states and overall values, as well. This ease of use makes it simpler to determine resource allocation in order to combat readmission rates regardless of other data.

Second, the scatterplots visually represent that there are possible correlations in the data within the selected data sets to readmission. These are a way to represent the need for additional investigation and data collection. Determining causes for readmission would be immensely helpful in reduction of readmission overall.

## C4: Interactive Controls

One interactive control is located on the Determining Problem Areas dashboard. The states on the maps themselves can be clicked on to focus the other graphs on that state’s data or the state data can be clicked on in the bar charts for the same effect. All data not related to that state will be greyed out or hidden from view.

Another interactive control for this project is on the Determine Correlations in Data dashboard page. There are individual sliders for each of the scatterplots shown. The top one has a slider for initial days (the amount of days of the initial hospital stay) while the bottom has one for BMI. These will hide data that doesn’t fit within the chosen range. This allows for closer inspection of the data. Furthermore, the orange and blue colors for ReAdmis can be selected to show only the values for that color, either “Yes” or “No” for orange and blue respectively.

## C5: Colorblindness

This project was ensured to be accessible to colorblind individuals. Utilizing information from a Tableau article, colors were selected that should not induce confusion. On one page, the color blue is utilized without any other colors, but shades of blue are indicative of a higher or lower value. Since these are all the same color and it is only a difference of shade, this should not cause any issues. On the scatterplot page, there are only two colors selected, orange and blue. Each value is one of those two colors and the two trend lines are orange and blue, as well. There are no shadings of note on this page and the orange and blue scheme should be recognizable as it fits within the appropriate color palette to be colorblind accessible. (Shaffer, 2016).

## C6: Data Representations

The two data representations that were used in the presentation were included to support the overall story being conveyed.

The maps showing readmissions by state per data set allows for a strategy to be created based on criteria such as minimum readmissions. Since readmissions being decreased, if not entirely eliminated, this data reveals where it would be most useful to implement different strategies as decided by leadership. For example, focusing on states with high rates of readmission could lead to the largest potential financial benefit.

On the page Determine Correlations in Data, the two scatterplots are shown because they represent combinations of variables that would warrant additional investigation. In the top chart, it can be seen that initial days and total charges have a clear correlation to readmission rates, and the bottom chart shows a possible correlation from the external data set with BMI. These are merely a way to express the potential value in enhancing the scope of data collection and how it may be possible to find causes of readmission given the correct variables. Being able to reduce readmissions to zero, or at least as close as possible, would be an ideal cost saving situation and determining causes would allow for exactly that.

## C7: Audience Analysis

According to the prompt, the audience consists of a panel of peers. The graphs and charts included were selected due to their ability to convey the necessary information to my peers. They would know how to utilize the simple graphs and charts but also may be able to extract additional information using various filters and selections. For instance, with the maps and bar charts on the Determining Problem Areas page, it is simple to identify states with a readmission rate above a certain threshold using the sliders included or by looking at the bar graphs themselves. With the goal being determining ways to reduce readmission, the included information is what I would want to receive. This is the same reason I included trend lines in the scatterplots included, as well.

## C8: Universal Access

Universal access for the project was achieved through a few methods. As mentioned prior, accessibility for the colorblind was taken into consideration. Fonts and font sizes were chosen to be large enough to be easily readable. The program used to view the story, Tableau Public, is free, and the presentation is also is accessible via the internet and your browser. Labels were included to make data more easily identifiable. No sounds of any kind were utilized.

## C9: Effective Storytelling

In order to facilitate successful storytelling, two elements were used to engage the audience: usage of filters and sliders and the creation of useful, interpretable representations. The filters that alter data shown on other graphs based on data chosen to highlight relevant information are a great way to enhance engagement and thereby increase the effectiveness of storytelling. Manipulable sliders that cause visual reactions for graphs were used for this purpose, as well. Secondly, the graphs and charts that were selected were chosen for their ability to effectively convey the information that I wanted. Utilizing simplicity over potentially convoluted graphs allows for easier digestion of information and a more pleasant experience with the data and presentation. This element also aids with effective storytelling as it allows for more succinct and poignant information delivery.

## D: Sources

Kaggle. *Medical Insurance Mix Data Set. https://kaggle.com/datasets/a088c9aa03dd1582693216e48469f39ea074baf7c90246e5d874a6c6b253b36a*

Shaffer, J. (2016, April 20). *5 Tips on Designing Colorblind-Friendly Visualizations*. Tableau. https://www.tableau.com/blog/examining-data-viz-rules-dont-use-red-green-together