Dashboard Guide: Hospital Readmission Data

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# **Part 1: Interactive Data Dashboard**

## A.  Provide a copy of your interactive Tableau dashboard to support executive decision-making. Your dashboard must be accessible to users with colorblindness, and must include the components in each of the following bullet points:

## •  data integrated from both chosen data sets

## •  **four** different data representations to summarize the data or display trends

## •  **two** different interactive controls that allow the user to modify the presentation of data

## •  **two** different metrics or key performance indicators computed using data from both chosen data sets

### 1.  Provide both data sets that serve as the data source for the dashboard.

Both data sets will be uploaded to the assessment submission. Additionally, the data sets are referenced on the reference page of the attached powerpoint presentation.

### 2.  Provide step-by-step instructions to guide users through the dashboard installation.

Installation is not necessary for this dashboard. Click on the link below to access the dashboard.

<https://public.tableau.com/views/WGUD210HospitalReadmissionAnalysis/Dashboard1?:language=en-US&:display_count=n&:origin=viz_share_link>

### 3.  Provide instructions to help users navigate the dashboard.

# Utilizing the executive dashboard:

1. Hovering over a state on the visualization map will provide data regarding the state’s overall readmission rates and the average number of day a patient stays in the hospital.

Text, application, map

Description automatically generated with medium confidence

1. Clicking on a state on the visualization map will alter the visualization on the dashboard to represent state specific metrics. The 30 Day Hospital Readmission Rates, Number of Days in Hospital, and Admission Type visualizations will change to reflect state specific data. Clicking the state again will return the dashboard to an overview of the data for all hospitals.
2. Alternatively, a state can be selected by utilizing the drop down menu labelled “State”. The 30 Day Hospital Readmission Rates, Number of Days in Hospital, and Admission Type visualizations will change to reflect state specific data. To remove the state dropfor filter, change the “State” dropdown filter option to “(All)”.

Graphical user interface, website

Description automatically generated

1. Clicking on a number of days filter at the bottom of the number of days filter will result in a change in the 30 Day Hospital Readmission Rates visualization and the Admission type visualizations.Click the number again to remove the filter. Graphical user interface

   Description automatically generated
2. Clicking on a category within the Admission Type visualization will result in changes of the 30 Day Hospital Readmission Rates visualization and the Number of Days in Hospital visualizations. Click the category again to remove the filter. Graphical user interface

   Description automatically generated

**Part 2: Storytelling with Data**

B.  Provide a link to a Panopto multimedia presentation in which you tell a story about the data to an audience of data analytics peers. Your presentation should implement elements of effective storytelling and include each of the following elements:

•  an introduction of yourself and your background

•  a summary of both chosen data sets and the context in which they occur

•  an outline of key results from your analysis of the two data sets

•  **two** different data representations to serve as supporting evidence for your results

•  a summary of actionable insights based on your results

Tableau Dashboard: <https://public.tableau.com/app/profile/cynthia.jimenez.howard/viz/WGUD210HospitalReadmissionAnalysis/Dashboard1>

Panapto Video:

# Part 3

# C.  Write a reflection paper to demonstrate your understanding of data representation and reporting by doing the following:

## 1.  Explain how the purpose and function of your dashboard align with the needs outlined in the data dictionary associated with your chosen data set.

According to the medical data considerations and dictionary provided, the main concern for my client is to keep readmission within the acceptable readmission limits per the Centers for Medicare and Medicate Services. In order to serve this need I conducted a random forest classifier analysis aimed at predicting readmissions and I calculated the most important features for predicting readmission. According to the feature importance calculator, most of the variables provided showed little importance in predicting readmission, the number of days was by far the most important feature. Consequently, my dashboard will allow the client to see an overview of their readmission rates, see the variability of readmission rates and admission types across all states and within states, see how the number of days in the hospital affect readmission, and see the admission type distributions across all hospitals and within states.

## 2.  Explain how the variables in the additional data set enhance the insights that can be drawn from the data set you chose from the provided options.

The ‘ffs-medicare-30-day-readmission-rate-puf’ data set which I retrieved from Kaggle contains a variable named ‘Readmission Rate’. I calculated the average ‘Readmission Rate’ and placed it at the top of my dashboard to provide the client with a comparison point for their 30 day readmission rates. If this additional data set was not utilized, it would be difficult for the client to determine how their readmission rates compare to CMS requirements.

## 3.  Explain two different data representations from your dashboard and how executive leaders can use them to support decision-making.

*The ‘Readmission Rate Per State’ visualization shows how readmission differ when viewing all hospitals vs viewing hospitals in specific states. The visualization can help decision makers focus their improvement efforts on the worst performing states. The ‘Number of Days in Hospital’ visualization shows the percentage of patients that stay in the hospital for X number of days and whether they are readmitted or not readmited. The visualization clearly shows that patients who are in the hospital longer are more likely to fall into the readmitted category. This helps support decision making by providing evidence to support initiatives aimed at reducing the number of days a patient is in the hospital.*

## 4.  Explain two interactive controls in your dashboard and how each enables the user to modify the presentation of the data.

*The “Readmission Rate Per State” map acts as a filter, by clicking a state or selecting a state, the 30 Day Readmission Rate visualization, the number of days in hospital visualization, and the admission type visualization change to show the state specific information. Additionally, the admission type visualization acts as a filter and can be used to change the view in the number of days in hospital visualization and the 30 day readmission rate visualization.*

## 5.  Describe how you built your dashboard to be accessible for individuals with colorblindness.

This dashboard was built to be accessible for individuals with colorblindness by utilizing a single color gradient for the map and by using the colorblind pallete to choose colors for the rest of the presentation.

## 6.  Explain how two data representations in your presentation support the story you wanted to tell.

Going from top to bottom and left to right, my dashboard sets up my data story in the following way:

First the top left visualization ‘CMS Target Readmission Rate’ sets up the context of what the Centers for Medicare and Medicaide Services expects average readmission rate to be. Next, the top right ’30 Day Readmission Rate’ visualization introduced the conflict- our coporation’s average readmission rate is much higher than the expected average readmission rate. Finally, the three visualizations at the bottom of the dashboard encourage the user to create action: in this case the actions are to focus on lowering readmission rates for the worst performing states, reduce the number of days our clients are in the hospital, and possibly consider consider reallocating resources to states with higher than average emergency admission types.

Graphical user interface

Description automatically generated

## 7.  Explain how you used audience analysis to adapt the message in your presentation.

According to the data dictionary, the audience in this case is a group of my peers. Since this group can range in technical and business knowledge, I have assumed the minimum audience is a casual observer and I have opened my presentation with a very general and relatable insight into why this project is important. Next, the audience analysis helps me to adapt my message to why this matters for our business in order to appeal to decision makers and those that will work to fulfill the decisions. Next, I’ll go into the specifics of what was collected, how the data wa calculated which will appeal more to a group of technical analysts, and finally, I’ll return with actionable insights that should at the very least be interesting to the casual observer, and at most give decision makers actionable insights.

## 8.  Describe how you designed your presentation for universal access by all audiences.

I designed my presentation to be universally accessible by:

1. Providing a personal connection and a business context.
2. Secondly, I minimized the amount of text used in my presentation and maximized the used of easily digestible graphics in order to help convey my insights in a simple manner.
3. I used the color blind friendly color in my visualisations.
4. Finally, I kept the technical information to a minimum and clearly stated the actionable insights found in my analysis.

## 9.  Explain two elements of effective storytelling that you implemented in your presentation and how each element was intended to engage the audience.

Two elements of effective storytelling used in my presentation are eliminating distractions and motivating the audience. Initially, my dashboard contained several more visualizations however, I removed any visualization that did not clearly provide information regarding the context, provide information regarding the conflict, or provide actionable insights for my story. I motivated the audience to take action by justaposing the expected readmission rate with the company’s hospital readmittance rate. Additionally, the background information provided context to indicate that fines would be incurred if the readmission rate was not reduced. Effectively the client was motivated by understanding that the current readmission rates are far higher than the target and by clearly stating the effect of not taking action.

Video referenced:

(<https://www.linkedin.com/learning/learning-data-science-tell-stories-with-data/motivate-the-audience?autoAdvance=true&autoSkip=false&autoplay=true&resume=false&u=2045532>)