**Performance Assessment**

NAM2 TASK 1: Data Dashboard and Representation

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D210 Data Dashboard and Representation

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# Part I: Purpose and Function

The purpose of the dashboard is to explore the readmission rates for the hospitals and try to uncover the root cause for said readmissions. Our stakeholders include executive leaders the organization such as Senior Vice President of Hospital Operations (SVP), Vice President of Research (VP) as well as a Panel of Regional Vice Presidents (Regional VPs). With a deep dive into the data and root cause, a decision can be made to minimize readmissions and potentially decrease costs and overhead associated with these readmissions.

# Part II: Navigation

The dashboard is divided into sections that relay different information. On the upper left is a map of the continental United States. Each state is highlighted with the number of readmissions and the corresponding percentage of the total. If a state is selected, the rest of the dashboard will be updated to only show information for that specific state. In the center of the dashboard, we have three filters namely State, Measure Name and Facility name. The State filter essentially does the same thing as the map. The Measure name is used to filter the CMS data (directly to the right) according to the six measures used by CMS to track hospital readmissions. This can be used to compare HealthCorp’s facilities’ information on readmission with those recorded by CMS about competitor’s facilities. The last filter is facility which can be used to select a specific facility. Directly to the right of the filters is the *CMS\_Readmission* section – as the name suggests, this further breaks down the information from the different facilities and the respective readmissions for each one of the six recorded measures. The section to the right of this is *Readmission Rate by Admission Type* which breaks down the readmissions by how the patient entered the hospital. It also shows what percentage of each admission type compared to the total readmission for HealthCorp facilities. The lower section shows the visualization for each state and graphs the number of readmissions compared to the length of stay. In this way, we can further investigate if the length of stay affected the readmission rate and also allowed for comparison of state-by-state statistics.

# Part III: Variables

The variables used in the data dashboard include the state of the health facility, readmission rate, facility name and admission type. Readmission rates further compared to averages tabulated by CMS’ Hospital Readmissions Reduction Program (HRRP) which includes information for readmission rates for specific conditions such as heart failure, pneumonia, and chronic obstructive pulmonary disease (COPD) among others (U.S Centers for Medicare & Medicaid Services, 2023). Using this data obtained from CMS and using the medical dataset, the readmission rates can be not only compared from facility to facility but also to national averages and other health institutions not within the organization.

# Part IV: Data Representations

Much information can be drawn from the dashboard, but two important observations are readmission by admission type and readmission by length of stay. Firstly, readmission by admission type can be used to focus on where the readmissions are happening the most. For example, half of all readmissions within the organization come from the emergency department while the other half is mostly equally distributed between elective and observation admission types. This demonstrates that the emergency department should be the first department analyzed for the root cause of high readmission rates. Secondly, the readmission by length of stay is also important in understanding whether there is any correlation between the number of days the patient spent in the hospital and whether they were readmitted. This information can provide insight into whether the readmission is due to the length of stay of the patient or other health factors particular to that patient.

# Part V: Interactive Controls

The dashboard includes three interactive controls in order to zoom into the data. These include facility state, facility name and measure name. Facility state and name can be used to determine where and which location had the highest readmission rates. In this way, actions can be taken to reduce them. Furthermore, measure names can be used to compare CMS’ national averages for the chronic conditions outlined previously. They can be used to see how each facility or state compares to publicly available data.

# Part VI: Accessibility for Individuals with Color-Blindness

In order to be accessible to everyone, including those with ocular deficiencies, the colors used were specifically selected in order to be easily seen by those who are color-blind. The software Colour Simulations was used in order to achieve this. Colour Simulations uses an overlay to display how the colors would be seen for those who have these deficiencies including Protanomalous/Protanope, Deuteranomalous/Deuteranope, Tritanomalous/Tritanope (Mangan, 2021). The colors for the dashboard were then changed and selected in order to be able to distinguish the visualizations clearly using the overlay.

# Part VII: Sample Data Representation

The first data representation that can be made using the dashboard it the relation between readmission across all facilities and length of stay. From the dashboard, we can see that readmission numbers varied as the length of stay was similar in all states. For example, we can see that California had 550 readmissions and Colorado had 179 with only 35 days for length of stay – this means that even with the same average length of stay, California had considerably more readmissions than Colorado. This pattern is seen across the board, not only with Colorado.

A second data representation that we can see is that emergency admission had the most readmissions, about the same as elective admissions and observation admission types combined.

# Part VIII: Audience Analysis

Having an understanding of the audience is paramount to conveying the correct information from your data. In this case, the audience consisted of leaders with varying degrees of expertise within the organization, albeit with minimal technical data analysis background. The dashboard concisely conveys the important information so leaders can take appropriate actions and make decisions that positively impact the organization. The Senior Vice President (SVP) of the organization oversees operations across all hospital locations therefore it is critical for them to understand what information the data tells so they can make the important decisions. The Vice President of Research (VP) can impact patient care and therefore should also understand the data correctly. Lastly, the Panel of Regional Vice Presidents (Regional VPs) can implement policies across the organization.

# Part IX: Presentation Design

The design of the dashboard was designed for universal access by all audiences. Firstly, the dashboard is easy to understand and analyze – information is geographically plotted and tabulated in an easy-to-read fashion. Moreover, as previously stated, persons with visual impairments were taken into consideration by the careful selection of colors that can be seen used in the map and in the bar graph. Secondly, it presents the data in a succinct, easy to understand matter in order to facilitate business decisions.

# Part X: Effective Storytelling

Effective storytelling is key for an adequate data presentation. Firstly, presenting data in a concise and easy to read format is paramount for the audience to understand the information (Microsoft, n.d.). In this case, the data specifically for readmissions was displayed and could be easily searched for. Secondly, knowing your audience and their level of technical expertise is also crucial – while some members might be very technical and know the data specifics/terms, others might need the overall global sense of what the data is really saying. Secondly, using visuals in a clear and uncluttered format is also key to effective storytelling. Using simple charts is best at relaying crucial information in a easy format.

Works Cited

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