Hospital Readmission Dashboard (Tableau Visualization)

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Tableau Project Link

https://public.tableau.com/app/profile/ashley.traore/viz/PAD210_v2/Story1?publish=yes

Datasets Used:

Riyadh Hospital Admissions Dataset (2020–2024) (*Riyadh Hospital Admissions Dataset (2020–2024)* 2024)

Hospital_Dataset_2022_2024.csv

WGU Dataset:

medical_clean.csv

Click on the Tableau link above, then the dashboard will open in the browser.

How to Access the Dashboard

On the main page, access the "Total Readmissions" tab to explore a detailed breakdown of hospital readmission rates. Here, you can select one or multiple hospitals to compare readmission percentages side by side. To further refine the view, toggle the Yes/No box at the top, this will provide a clearer distinction between patients who were readmitted and those who were not.

Navigate to the "Readmission Details - Gender" tab to analyze readmission rates based on gender. This section allows you to compare individual hospitals and observe gender-related trends over time. Use the checkboxes on the left to filter specific hospitals or select all to view overall trends. Additionally, toggle the Male/Female boxes to focus on readmission rates for each gender separately.

Select the "Readmission Details - Age Group" tab to examine how readmission rates vary across different patient age groups. Identify hospital trends and compare multiple facilities using the toggles on the right. For a more detailed view, select a single hospital or age group to analyze the percentage of readmissions within each age group, displayed dynamically in the bubble chart.

Purpose of the Analysis

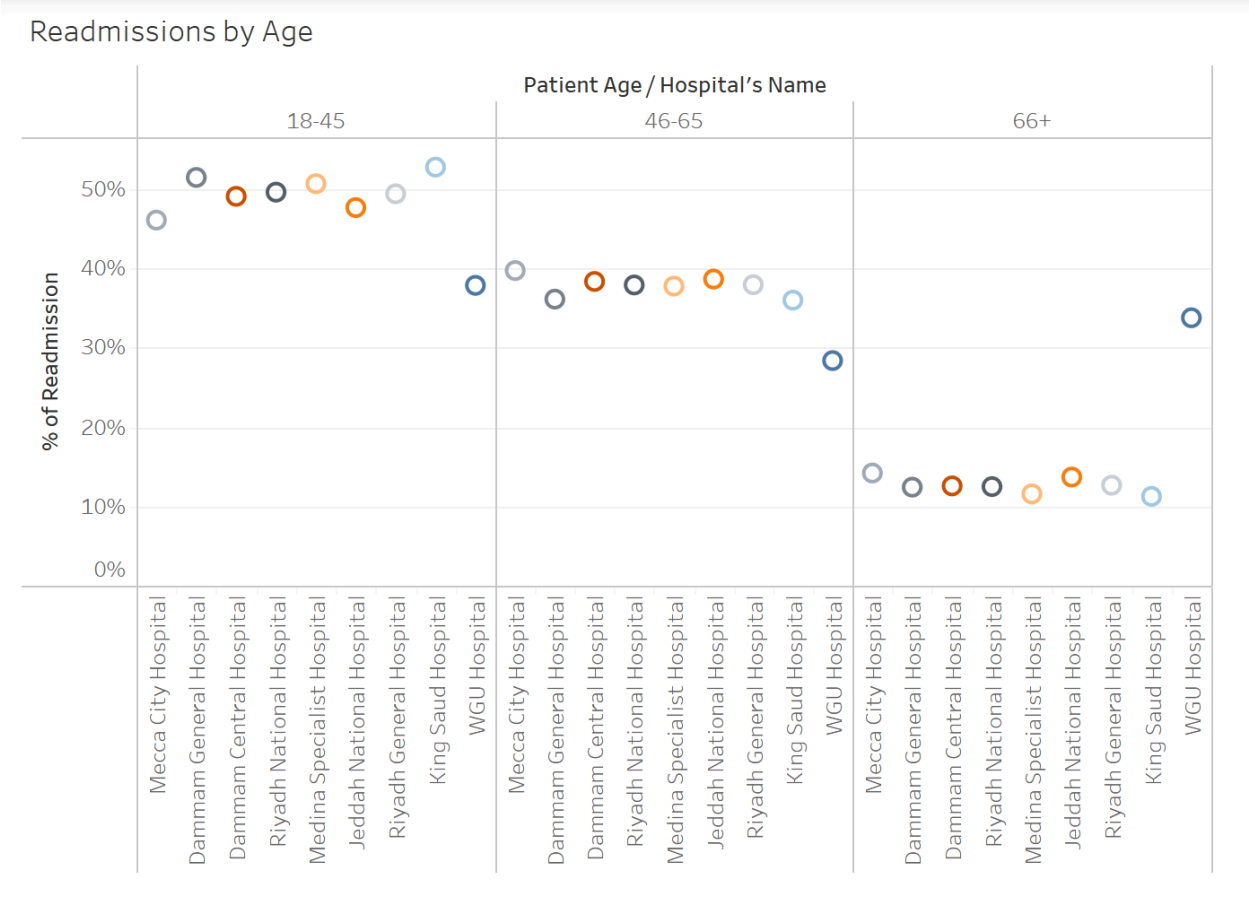
The data dictionary emphasizes the negative impact that high readmission rates can have on a hospital. This analysis aims to provide deeper insights into readmission trends in comparison to other hospitals, enabling the audience to identify key areas for improvement in reducing readmissions. For instance, the analysis reveals that patients aged 66 and older experience higher readmission rates at WGU Hospital compared to others. With this insight, the hospital can strategically focus on addressing the root causes of readmissions in this age group, ultimately minimizing the overall negative effects associated with frequent patient readmissions.

Value of the External Dataset

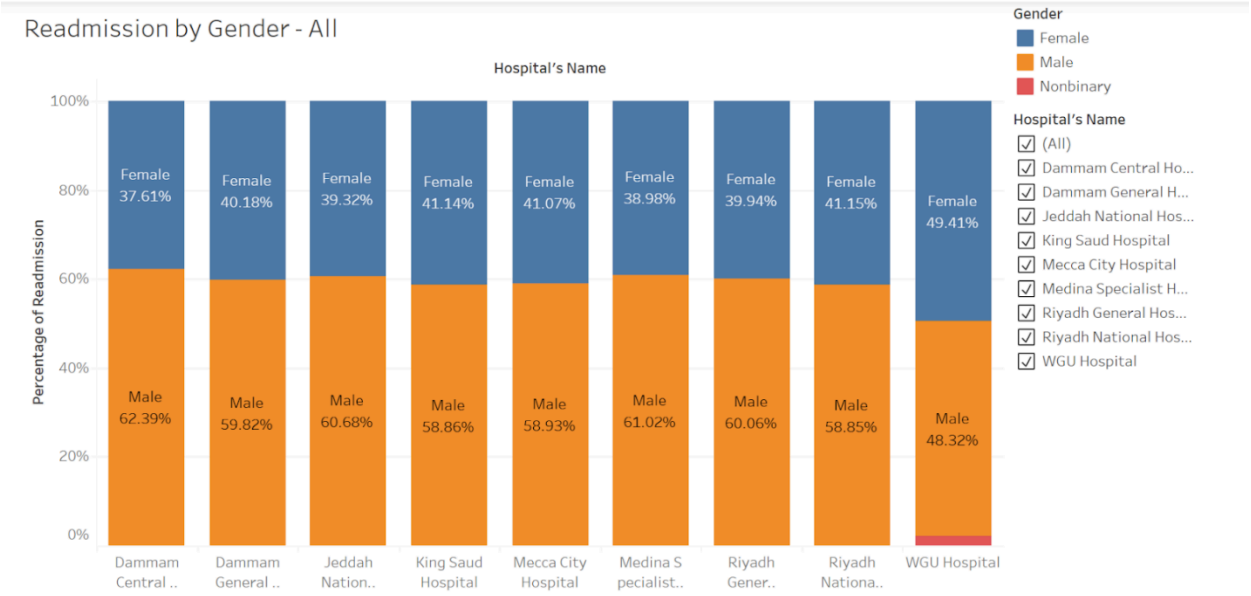
The additional dataset utilized in this project offers detailed patient readmission data and demographic insights for competing hospitals. By comparing WGU Hospital's metrics to those of its competitors, the organization can make data-driven business decisions to enhance overall performance. Gaining visibility into where other hospitals excel and where they fall short enables WGU Hospital to identify key areas for improvement, refine strategies, and implement targeted solutions to reduce readmission rates and optimize patient care.

Key Insights From the Visualizations

The data visualization below provides a comparative analysis of WGU Hospital's performance against competing hospitals, illustrating readmission rates across different age groups. WGU Hospital demonstrates strong performance in the 18-45 and 46-65 age ranges, consistently maintaining lower readmission rates than its competitors. However, for patients aged 66 and older, WGU Hospital exhibits a significantly higher readmission rate compared to other hospitals. By leveraging these insights, the hospital can develop targeted strategies aimed at reducing readmissions within this vulnerable age group.



The data visualization below provides a comparative analysis of WGU Hospital's performance against competing hospitals, illustrating readmission rates across different genders. WGU Hospital exhibits a higher female readmission rate at 49%, surpassing other hospitals, where female readmission rates remain at 41% or lower. By leveraging these insights, WGU Hospital can optimize discharge planning, refine patient education strategies, and enhance follow-up care to lower readmission rates for female patients while maintaining effective strategies for male patients.



Interactive Features Included

The dashboard includes two key interactive features that enhance data exploration. Users can navigate to the “Total Readmissions” tab and select one or multiple hospitals from the panel on the right. This dynamically updates the bar chart, displaying data only for the chosen hospitals. This feature enables direct comparisons between facilities or a focused analysis of an individual hospital’s readmission metrics, providing a more tailored and insightful visualization. Additionally, users can refine their analysis by filtering specific age groups using the drop-down menu at the top left of the page. This functionality allows for a detailed comparison of readmission rates across different hospitals for selected age ranges, helping users identify patterns and trends within specific patient demographics. These interactive controls allow users to explore hospital performance with precision, making it easier to target improvement areas and drive data-informed decisions.

Accessibility and Colorblind-Friendly Design

The dashboard was designed with colorblind accessibility in mind, utilizing color schemes that are specifically optimized for users with color vision deficiencies. To ensure clarity and inclusivity, only colorblind-friendly color schemes were incorporated, avoiding any color combinations that could create visual barriers or hinder data interpretation.

Summary of Findings

This analysis aims to provide a detailed perspective of readmission trends across competing hospitals, allowing performance comparisons. The initial visualization showcases each hospital's overall readmission rate, allowing users to quickly evaluate which hospitals are performing better or worse. WGU Hospital has a 36.69% readmission rate, the lowest among all competing hospitals.

Further insights are uncovered through interactive tabs that break down readmission rates by gender and age group. The Gender tab offers a comparative analysis of male and female readmission trends, The bar chart reveals that WGU Hospital has a 49.41% female readmission rate, exceeding that of competing hospitals. Meanwhile, the Bubble Chart on the Age Group tab highlights a significantly higher readmission rate for patients aged 66 and older at WGU Hospital, signaling an opportunity for targeted improvements. While WGU maintains the lowest overall readmission rate, these detailed insights pinpoint specific areas for optimization, ensuring a more strategic approach to reducing readmissions across key patient demographics.

Audience Considerations

Audience analysis played an important role in shaping the message of the presentation to ensure clarity, relevance, and engagement. By identifying the audience's background as executive leaders, the presentation was designed to emphasize data-driven insights and actionable takeaways rather than just statistical observations.

For instance, instead of simply presenting raw readmission rates, the visuals and explanations focused on comparative performance against competing hospitals, enabling the audience to quickly pinpoint areas for improvement. Additionally, interactive elements were incorporated to allow users to filter data by hospital, gender, and age group, making the information more personalized and actionable.

Accessibility and Inclusive Design Choices

The dashboard was designed to be inclusive and accessible, ensuring all users, regardless of visual, auditory, or cognitive differences, can easily engage with the content. To enhance visual accessibility, colorblind-friendly color schemes were carefully chosen to prevent any difficulty in distinguishing key elements. Important information is clearly labeled for better interpretability, while intuitive interactive features allow users to filter data and adjust views seamlessly. For clarity and ease of understanding, the content is organized in a logical, user-friendly flow, breaking down complex data into

straightforward, easy-to-read visualizations. Well-defined headers, structured sections, and tooltips help both analysts and casual viewers navigate the information effortlessly.

Storytelling Elements in the Dashboard

The dashboard integrates two elements of storytelling to create a compelling and insightful analysis.

First, it establishes a clear narrative flow, beginning with a broad overview of hospital readmission performance. The initial tab presents high-level comparisons across hospitals, offering users a foundational understanding of how hospitals stack up against one another. As users navigate deeper into the dashboard, additional tabs provide a detailed breakdown of readmission rates by gender and age group, allowing for progressive discovery of key trends. This layered approach ensures that the audience can follow the story logically, moving from big-picture insights to more specific findings that shape decision-making.

Second, the dashboard enhances storytelling by creating data-driven contrasts that reveal opportunities for improvement. At first glance, WGU Hospital appears to perform better in overall readmission rates compared to competitors, reinforcing its strong institutional performance. However, deeper analysis uncovers critical gaps, particularly in female readmissions and patients aged 66 and older, where competing hospitals show stronger outcomes. This contrast adds depth to the narrative, illustrating that while WGU excels in certain areas, there are targeted opportunities for improvement in key patient demographics. By weaving these insights into the dashboard structure, the audience is guided toward actionable conclusions that drive informed decision-making.

Sources

Riyadh Hospital Admissions Dataset (2020–2024). Kaggle. (2024, November 23). https://www.kaggle.com/datasets/datasetengineer/riyadh-hospital-admissions-dataset-20202024