Data Analysis

D211 WGU

TRESA (TESSIE) AUSTIN

The dashboard "Hospitalization Insights: Costs, Length of Stay, and Readmission Rates by Age, Gender, Risk, and Condition" supports executive decision-making for hospital administrators. The data aligned in the dashboard will allow anyone in charge of a department, a facility and executives in other areas of the hospital to make decisions around how to address readmission rates that are rising across the nation. The dashboard is composed of two datasets that support analysis of readmission rates as well as how patients view their hospital stay overall.

The written report accurately outlines the exploration of the data, the use of advanced SQL operations, and the analysis of the data.

C1: Dashboard alignment for needs of stakeholder

The purpose and function of the dashboard aligns with the needs of the stakeholders by providing needed information around length of stay, costs, and how number of doctor visits play into the readmission rates. Each pane in the story provides details and options to manage the data with a filter of readmission as well as other factors that are of interest to administrators or other stakeholders.

Adding data from Kaggle.com that provided data that aligned with our WGU medical data file and added pieces such as condition, outcome and satisfaction give a fuller picture for stakeholders to use in addressing readmission rates that seem to be soaring.

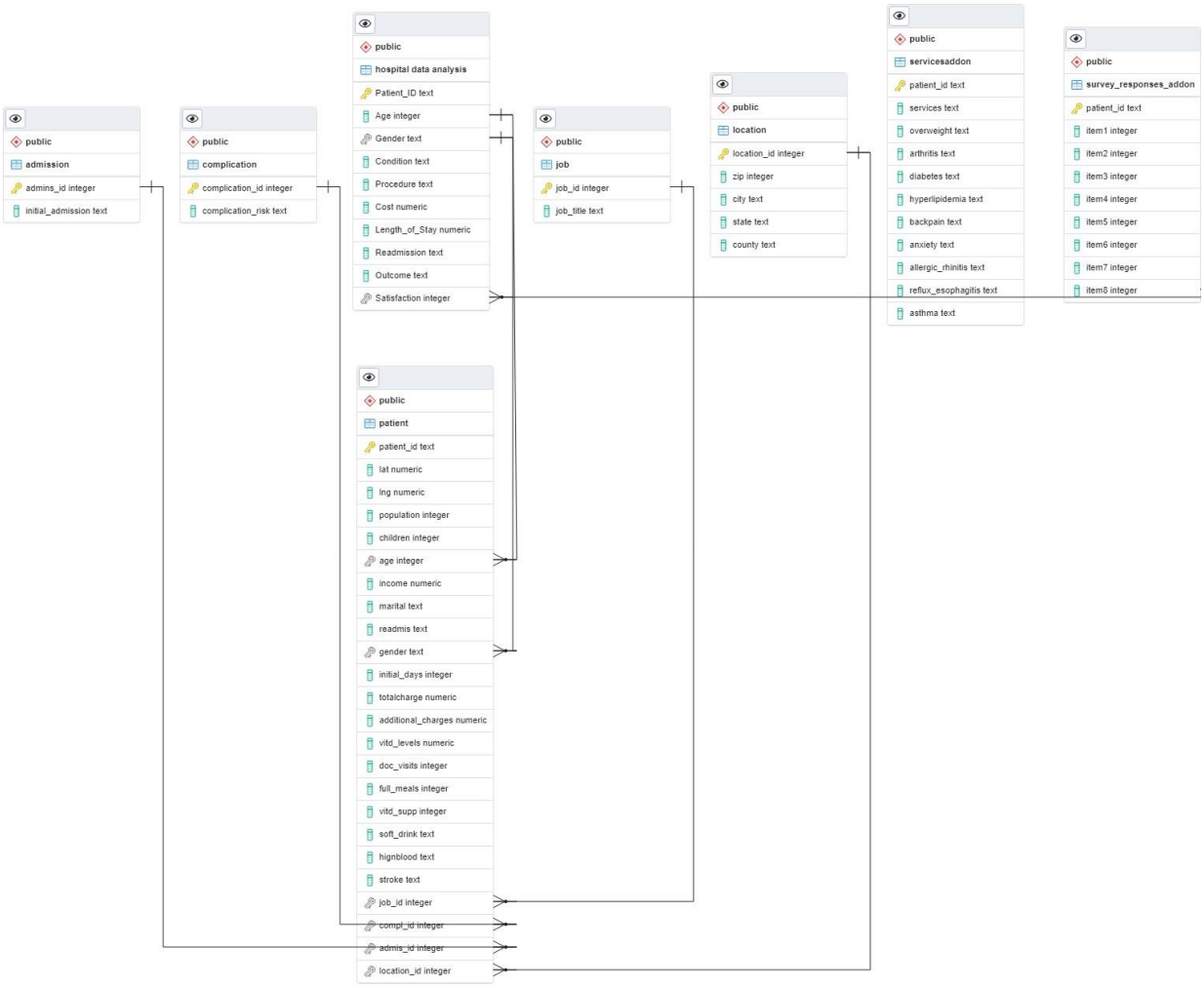
C2: Business intelligence tool selection

The selection of the business intelligence tool used is Tableau. Tableau offers interactive dashboards so users can slice and dice the data easily (Kim, 2024). The options in Tableau such as calculated fields, various graphing options, filters and more make it eye catching as well a functional for many types of data analysis. Tableau. (n.d.) is useful for creating dynamic relationships between tables as well as using straight SQL coding for joins. Both of these were used to create the data analysis and dashboards needed.

C3: Data cleaning

The steps used to clean and prepare the data for the analysis were very minimal. However, the need to append the medical_data database with a new table was used. Steps to import a file into PostgreSQL and create a table were found via the web (PostgreSQL, n.d.). The medical_data in PostgreSQL was provided and based on previous use of that dataset it met most needs as is. One variable, initial_days, had to be addressed to align with the hospital data analysis dataset that was used. An alter table function to round the values to whole numbers was completed.

Creation of an ERD via pgAdmin (pgAdmin Team, n.d.) was done to provide context for the database schema and show how the data is aligned. Ensuring referential integrity was also achieved by providing primary keys (w3resource, 2024).



C4: Dashboard creation

The summary of the steps used to create the dashboard are as follows and were enhanced with information from Loth, A., Vogel, N., & Sparkes, S. (2019).

1. Connect to PostgreSQL
2. Create a table under the medical_data schema
3. Import hospital data analysis.csv to populate new table
4. Create custom SQL to join patients table and hospital data analysis table
5. Blend admission and survey_response_addon tables with patient table using primary linking fields
6. Create worksheets based on Length of Stay (2), Cost factors (2), and Doctor Visits (2)
7. Create dashboards from worksheets. Length of stay factors, Cost factors, and Doctor Visit information.

8. Create story board from the three dashboards with panels across the top for navigation.

C5: Data analysis results

The results of the data analysis show that readmission rates for more serious conditions and more extensive procedures occur more often. This provides stakeholders with information that can be used to devote more resources to this population and/or see if there are opportunities for procedures to be done in a timelier manner to reduce the overall length of stay. In terms of costs, the data provides a somewhat obvious conclusion that older individuals have a more costly hospital stay. Stakeholders can use the information to look at alternative options for care for elderly patients. For the average number of doctor visits, we can see that there isn't much difference in gender or patient outcome in terms of how many times on average a patient sees their doctor. There is some variation by admission type which is also to be expected. Patients admitted for observation aren't seen as many times as emergency or elective admissions.

There were some points such as initial days for things like fractured arm and appendix removal that seemed large and days for certain procedures were longer than conditions. More data is needed and more information between data points is needed to ensure that we can use these data points effectively.

The results support the purpose and function of the dashboard by easily showing how each data point aligns with the overall emphasis on readmission. Having filters available to see immediately how readmitted versus non readmitted patients align is helpful for stakeholders.

C6: Analysis limitations

The limitation(s) of the data analysis came into play around factors such as not having more detail on why a patient was readmitted and if there were other factors that caused their stay to be longer or why they gave the satisfaction score they did.

D: Web Sources

https://www.kaggle.com/datasets/blueblushed/hospital-dataset-for-practice

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E: Sources

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