**September 20, 2020**

**Kortney Grayson 2020 CAPSTONE PROJECT:**

**HOW DIABETES AND OTHER MEDICAL FACTORS RELATE TO PATIENT HOSPITAL STAY**

In the world we live in with many different illnesses and diseases, Diabetes is one type that has been near my heart and personal experience for decades. In my community I have seen the effects of Diabetes or as its commonly referred to “Sugar” impacting many of the older generation in an adverse way. There were always more questions than answers, as my loved ones would go into the hospital for a myriad of reasons their diabetes would always be a part of the diagnosis, but what role did it play in their duration in the hospital? Would an individual without diabetes who was admitted into a hospital be subject to the same length of stay as a patient diagnosed with diabetes? This capstone project gave me the tools I needed to answer some of these questions and develop a level of understanding of the complexities surrounding Diabetes and other Diseases and/or Illnesses that can be corelated to it.

To begin the data analysis, I downloaded the excel document from the database” <https://archive.ics.uci.edu/ml/datasets/diabetes+130-us+hospitals+for+years+1999-2008>”, there are a total of 54 columns and 101766 rows within the data set. Once I downloaded the data, I converted excel file into a csv file in order to run my code in google colab. Once data was uploaded to tableau there were several calculated fields including “Time in Hospital from a count to a date”, “Updating Gender”, “Difference in Lab Work” and a field encompassing the complete diagnosis of the patient. Utilizing These calculated fields I was to create graphs to visualize the data.

The first visualizations I created displayed the total patient population broken down by ethnicity age and top reasons for admission into the hospital. With all the patients suffering with the common disease of disease of diabetes I felt it would be informative to breakdown how different age groups and the reason why they were admitted to the hospital initially. The second set of visuals reflected my look into the average length of time by primary diagnosis, this graph was filtered by age as well as readmission percentage for each initial diagnosis. Giving expectations goes a long way families of patients looking to understand when their loved ones will be returning home. Looking into initial diagnosis was able to provide a path to that end. Knowing how important insulin levels are to the health of an individual managing with diabetes is I thought it would be helpful to understand how a relative patients insulin levels led to their length of stay within a hospital. I also looked to the average lab work for the average length of stay for patients on this graph I filtered by age and gender. Lastly, I visualized each ethnicity by the number eof patients who had the same initial diagnosis and the percentage of the different discharge locations by age.

In the end by utilizing this data I was able to come to a deeper understanding of the average length of stay based on the initial diagnosis with different determining factors of ethnicity, age, gender as well as the role insulin levels plays in determining the average stay for a patient. Over the course of this class being able to navigate through these programs using the different functionalities has given me a deeper appreciate for the material we learned because it allowed me to analyze this data and express t=my research through visualizations