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CIS 4150: Foundations of Business Intelligence

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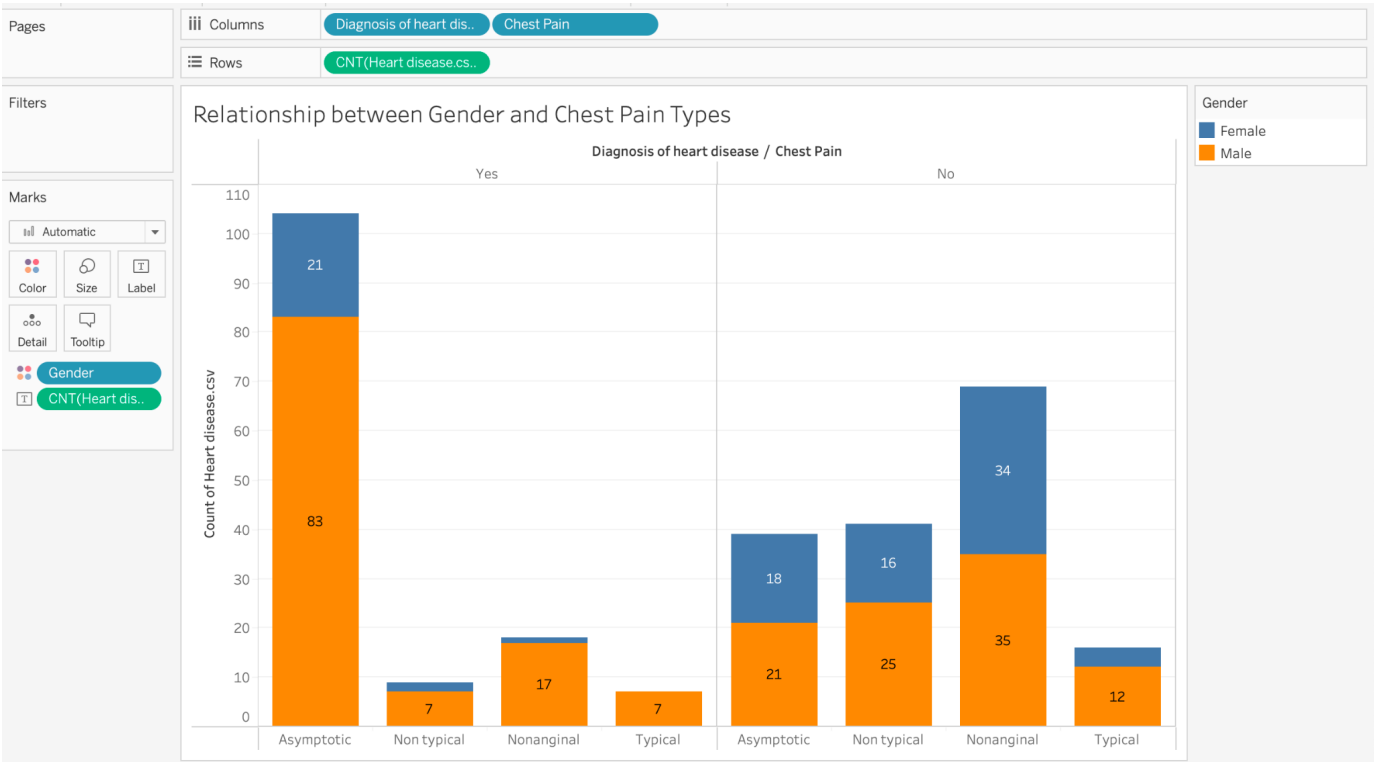
Project Part 3

A) Data visualizations

Question 1:

Is there any relationship between gender and chest pain types for the patients who have heart disease?

Question 1 Screenshot:



Question 1 Explanation:

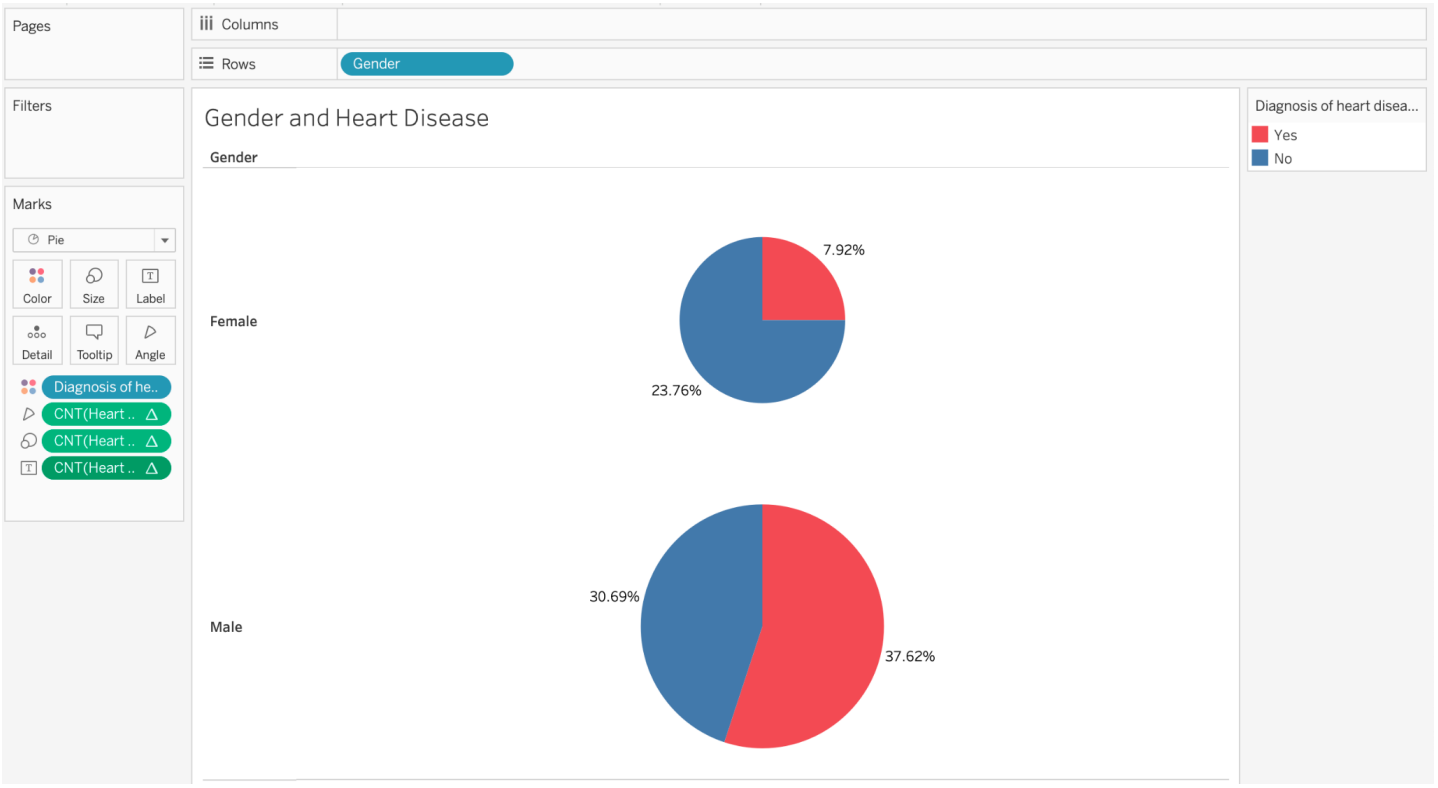
The stacked chart displays the two genders with heart disease, and it is applied to the type of chest pain for the targeted class. It is observed that the targeted class with the chest pain asymptotic for males has the highest risk of heart disease with 83 total in the count. And the

chest pains for the patients with heart disease such as nontypical and typical had the lowest count in both males and females.

Question 2:

Which gender is more likely to have heart disease?

Question 2 Screenshot:



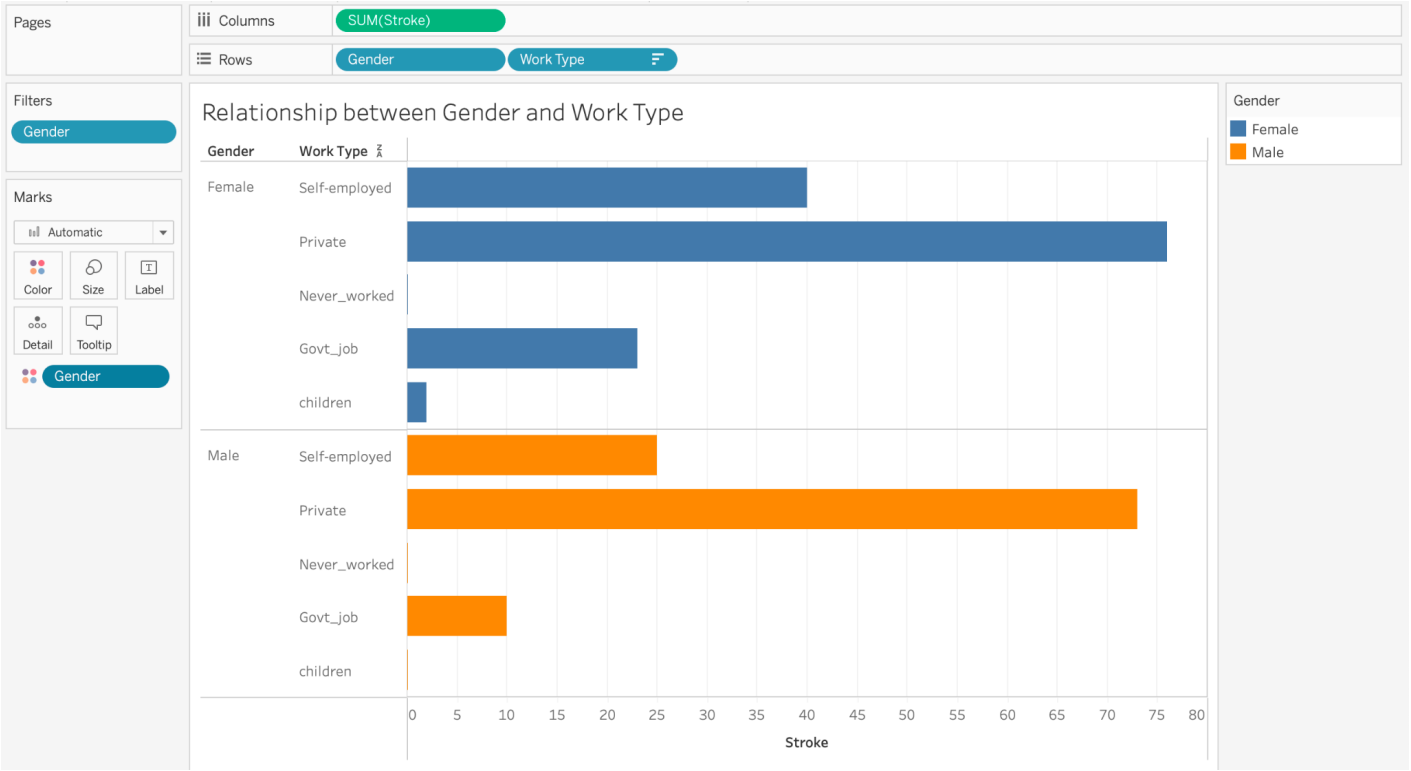
Question 2 Explanation:

The pie charts focus on the genders who are more likely to have heart disease. The pie chart is based on patients who have heart disease. Within the male's pie chart, it is seen that the highest predicted gender for heart disease is males with 37.62% in the count. Females are less likely to have expected heart disease because of their low count with 7.92%.

Question 3:

Which work type is more likely to have a stroke?

Question 3 Screenshot:



Question 3 Explanation:

The horizontal bar chart predicts the gender who are most likely to have a stroke depending on the kind of work type. Based on this chart, both females and males are most likely to have a stroke if they're working in a private kind of job. Examples of private types of jobs include law firms, estate agencies, and also hospitals. In this chart, both females and males who are less likely to have a stroke are people who have never worked.

Question 4:

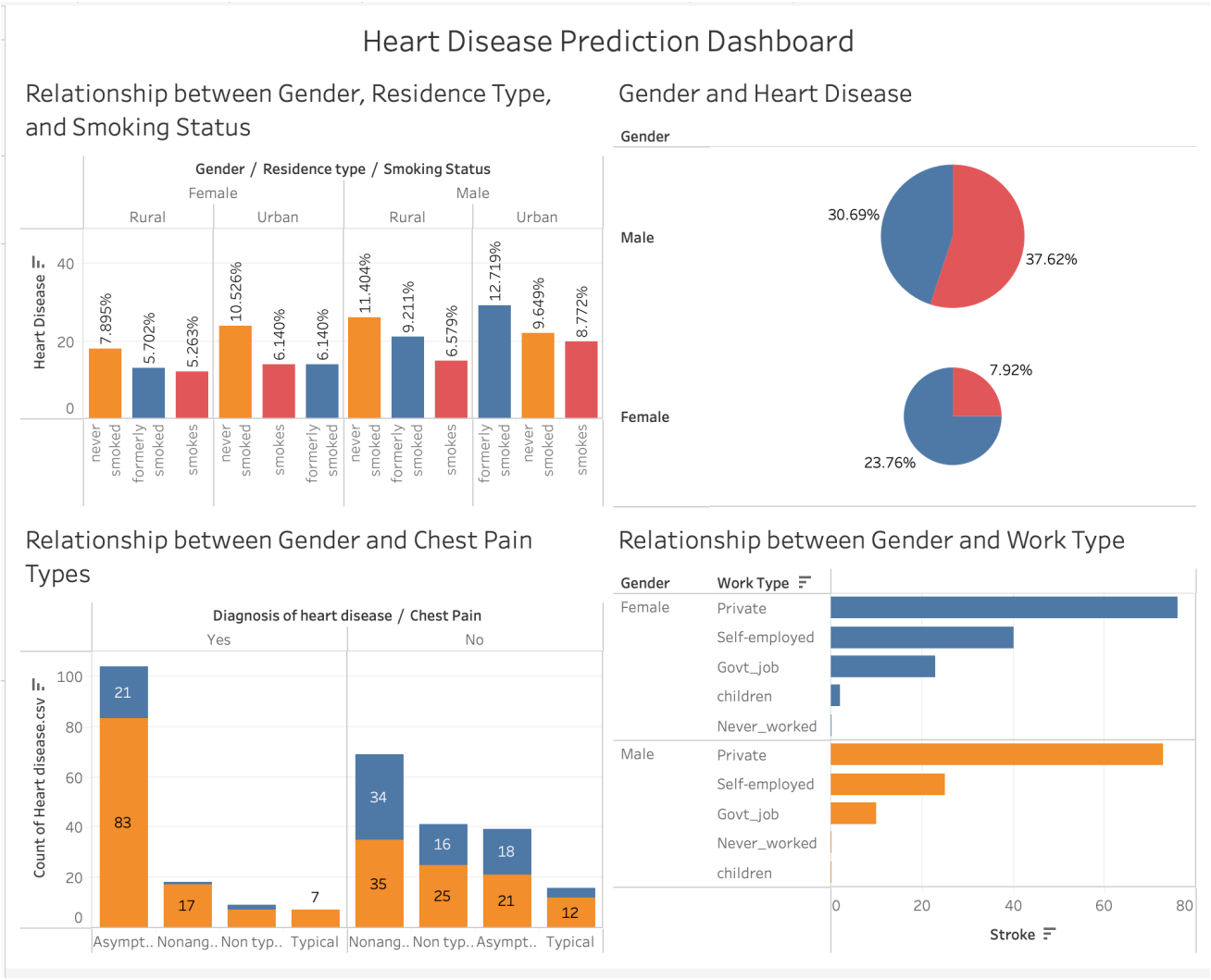
Is there a relationship between gender, residence type, and smoking status?

Question 4 Screenshot:

Question 4 Explanation:

In this side-to-side bar chart, it is considered to predict the heart disease between males and females based on their residence type and smoking status. In this chart, it is seen that males and females that live in urban areas are more likely to have heart disease than people living in rural areas. It is also seen that males who formerly smoked are most likely to have heart disease.

B) Heart Disease Prediction Dashboard:

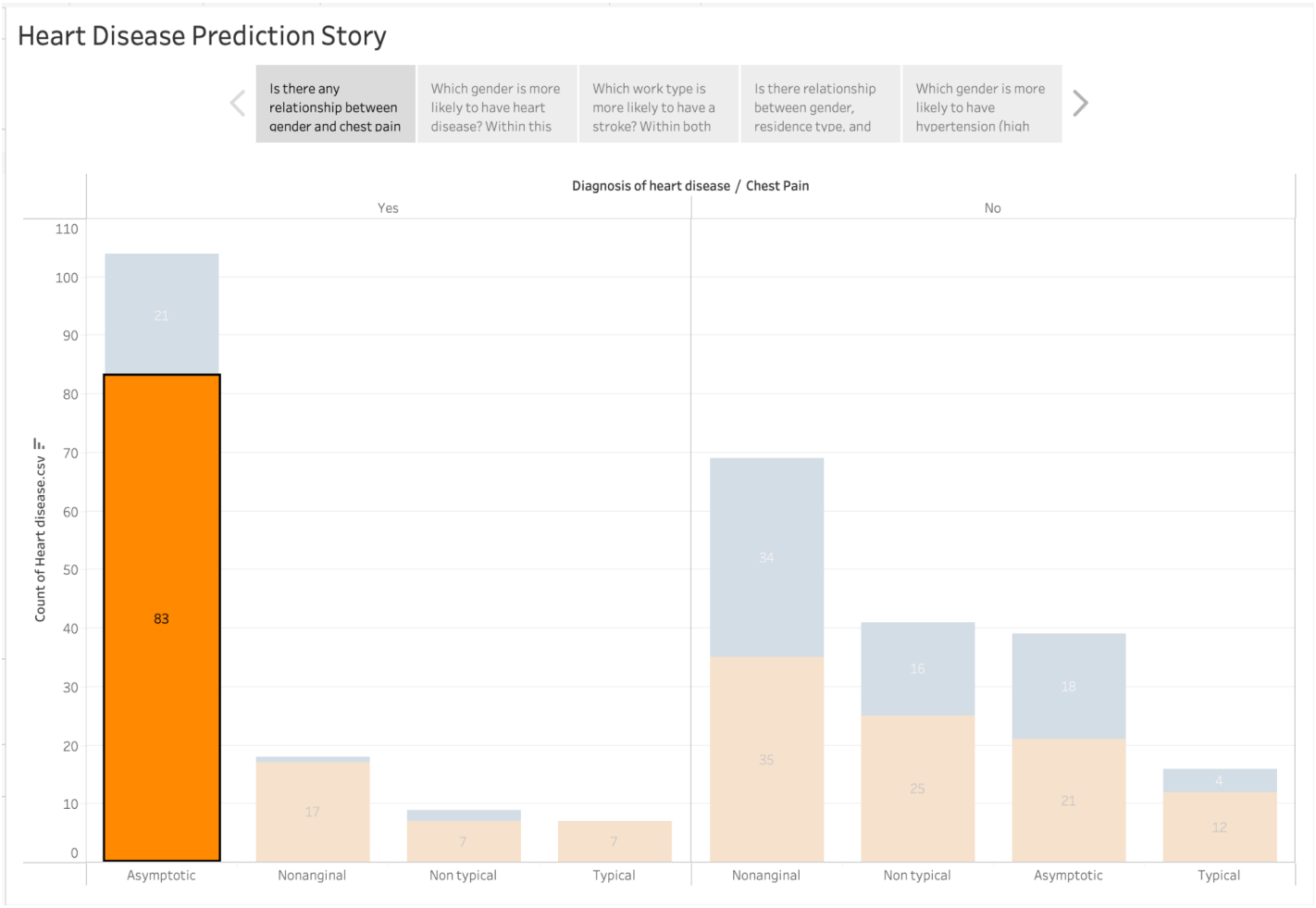


Explanation:

Each element of the dashboard continues to explore the prediction of heart disease. The chart called Relationship between Gender, Residence Type, and Smoking Status interacts with all of the charts with heart disease patients. As the viewer clicks and highlights a category such as females in any of the charts, the female category will be showing all total percentages and number counts on only females for all charts. Also when the viewer clicks and highlights males,

all of the charts will actively demonstrate the male percentages and number counts of male patients with heart disease.

C) Heart Disease Prediction Story:



When building story points on Tableau, it is essential to use story points to create interactive and captivating stories with your dataset. In the first story point, the chart displayed is the relationship between gender and chest pain type for patients with heart disease. It is noticeable that each category with the highest chest type pain, such as nonanginal and nontypical, is least likely to be diagnosed with heart disease. And the highlighted count in asymptotic for males has a higher rate of being diagnosed with heart disease. According to this article called Ruling out coronary heart disease in primary care patients with chest pain: a clinical prediction score, “Cardiovascular risk factors and chest pain history are associated with CHD, and have been widely studied. However, chest pain characteristics alone are not sufficient to reliably rule out ischemic heart disease” Gencer, B., Vaucher, P., Herzig, L., Verdon, F., Ruffieux, C., Bösner, S., & Favrat, B., 2010).

In the second story point, it is noticeable in the pie chart that males are more likely to have heart disease than females. The diagnosis of heart disease in males was 37.62%, and females had a lower percentage of 7.92%. According to this article called Association rule mining to detect factors which contribute to heart disease in males and females, “Analyzing the information available on sick and healthy individuals and taking confidence as an indicator, females are seen to have less chance of coronary heart disease than males” (Nahar, J., Imam, T., Tickle, K. S., & Chen, Y. P. P., 2013). Since the number of heart diseases was higher in males, I wanted to know which work type would have a higher chance of having a stroke in my horizontal chart and story point three. Based on the different work types, the private work type for both females and males had an increased chance of having heart disease than the other work types. In my chart, I would suggest that prevention of the work setting stress might decrease in having heart disease.

Under the side-to-side bar chart and story point four, it was noticeable that males living in an urban area and formerly smoked had the highest chance of having heart disease. There are many different factors to having heart disease, and the residence type and the gender's smoking status might affect having heart disease. Although females who have never smoked and live in an urban area are more likely to be diagnosed with heart disease. As residence type and smoking status didn't have much of an effect on heart disease, I wanted to see if being married would have a relationship to hypertension in my bullet graph. In my chart, it is noticeable that being married would have a higher chance of having a stroke and hypertension (high blood pressure). As seen in all of my charts, there are many different factors where males and females can have an increased risk of having heart disease, a stroke, and hypertension.

As viewers click on different interacting story points, the audience can explore the data and walk through different sections of heart prediction failure through the dashboard story. Storytelling can have many benefits to my dashboard such as providing a meaningful summary on patients who had heart disease. Another way story-telling can help benefit the audience is stated in this article called Creating Data Stories with Public Tableau, "When authors create a public interest story elements with Tableau Public, readers can interact with the analysis, which creates a personal experience and translates into increased participation and decreased abandonment" (Ohmann, A., & Floyd, M., 2015). As many workplaces start using Tableau, we can see how the skills in creating story points on a dashboard and how to express a compelling story are becoming a valued accomplishment in almost every field such as healthcare and medicine.

References

Gencer, B., Vaucher, P., Herzig, L., Verdon, F., Ruffieux, C., Bösner, S., ... & Favrat, B. (2010). Ruling out coronary heart disease in primary care patients with chest pain: a clinical prediction score. *BMC medicine*, *8*(1), 1-10.

Nahar, J., Imam, T., Tickle, K. S., & Chen, Y. P. P. (2013). Association rule mining to detect factors which contribute to heart disease in males and females. *Expert Systems with Applications*, *40*(4), 1086-1093.

Ohmann, A., & Floyd, M. (n.d.). *Creating data stories with Tableau Public*. Google Books. Retrieved November 22, 2021, from https://books.google.com/books?hl=en&lr=&id=NvqoCwAAQBAJ&oi=fnd&pg=PP1&dq=story%2Bpoints%2Btableau&ots=Pixp6TtWvk&sig=Zqlmm2vlbAuCUHlpilm9uBfoNaU#v=onepage &q=story%20points%20tableau&f=false.