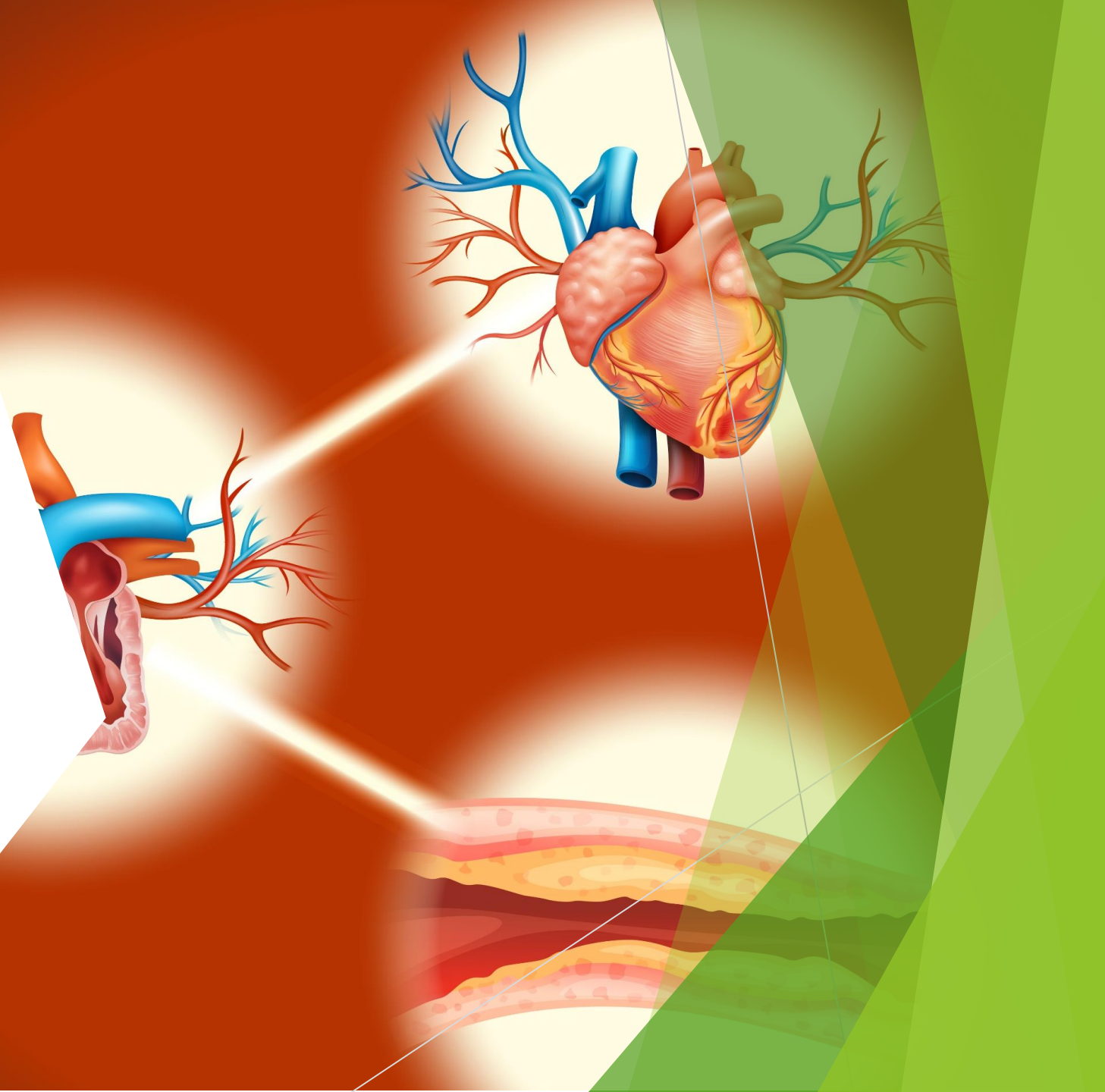


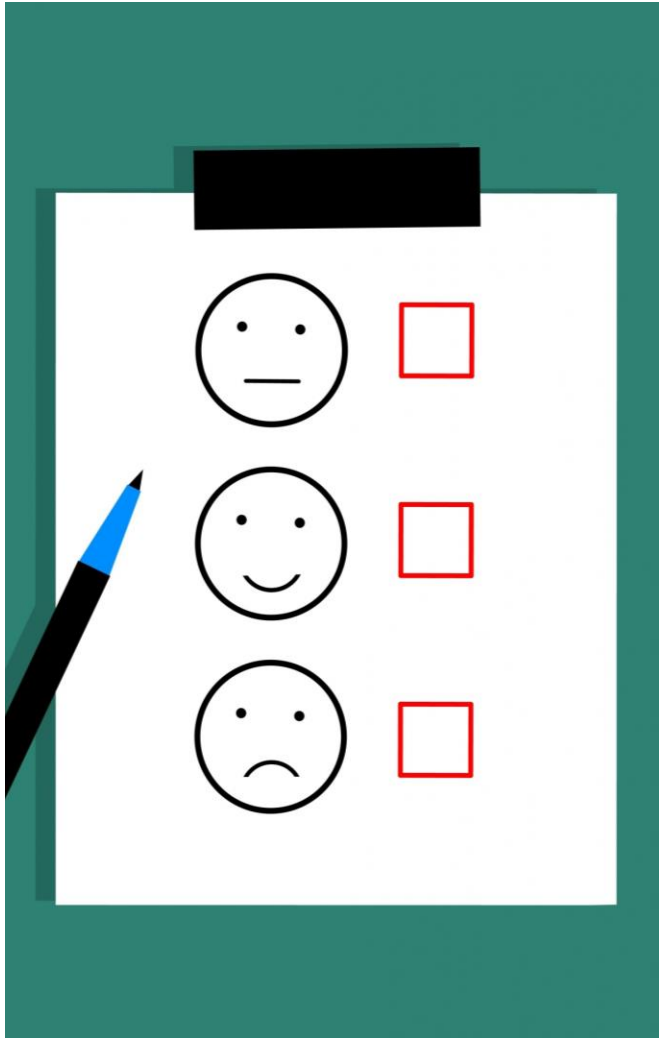
Heart Disease





Introduction

- ▶ Heart disease is the top cause of death in the United States. In 2021, heart disease caused 1 in 5 deaths, nearly 700,000 people (Cleveland Clinic).
- ▶ Heart disease includes many diseases that affect your heart, but coronary artery disease (CAD) is the most common and familiar one. CAD can create a waxy buildup in your heart's arteries that can cause a heart attack (Cleveland Clinic).
- ▶ A heart attack occurs when the blood flow to a part of the heart is blocked by a blood clot. If this clot cuts off the blood flow completely, the part of the heart muscle supplied by that artery begins to die. (American Heart Association).
- ▶ Symptoms include chest pain or discomfort, upper back or neck pain, heartburn, nausea or vomiting, extreme fatigue, dizziness, and shortness of breath (CDC).
- ▶ The relevance of risk factors and methods of prevention vary from study to study. These inconsistencies motivated us to learn more about heart disease



Dataset Source

- ▶ The dataset consists of heart disease risk factors, lifestyle indicators, demographic indicators, location information, Covid status, and other variables gathered from the 2022 annual CDC survey of more than 400,000 adults related to their health status.
- ▶ The data contained in the dataset was obtained through the Behavioral Risk Factor Surveillance System (BRFSS), which conducts annual telephone surveys to collect data on the health status of US.
- ▶ The author of this updated dataset reduced the nearly 300 original variables down to 40, making it much easier to group data for analysis.
- ▶ We discovered the dataset via Kaggle.com.
- ▶ Below is the link to the dataset. Make sure to check it out! 😊

[Indicators of Heart Disease 2022](#)



Data Exploration & Cleanup Process

- ▶ Once selected, the group discussed the contents of the dataset. Each member of the group selected the data that they found most interesting and would help answer one of our group questions.
- ▶ The remaining columns, which were unnecessary for our analysis, required cleaning. Examples of these are 'Removed Teeth', 'Deaf/Hard of Hearing', 'Blind/Vision Difficulty', etc.
- ▶ The final step of the cleanup process was executed in Jupyter Notebooks, where data was reduced to specifically aid in answering our individual questions.
- ▶ This processes can be followed step-by-step in our repository below:

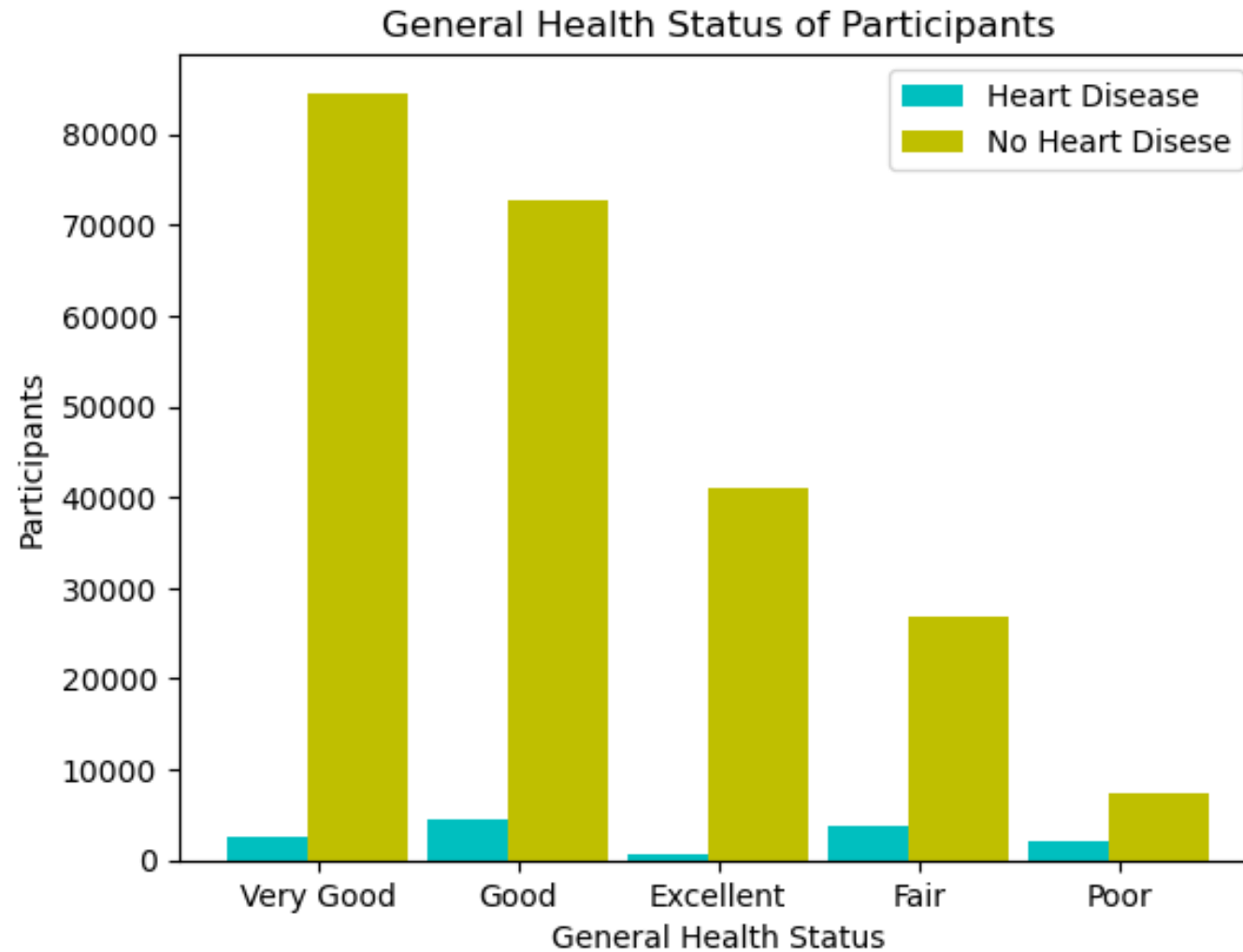
[GitHub Respository](#)

Analysis Process:

Questions we will attempt to answer in our project

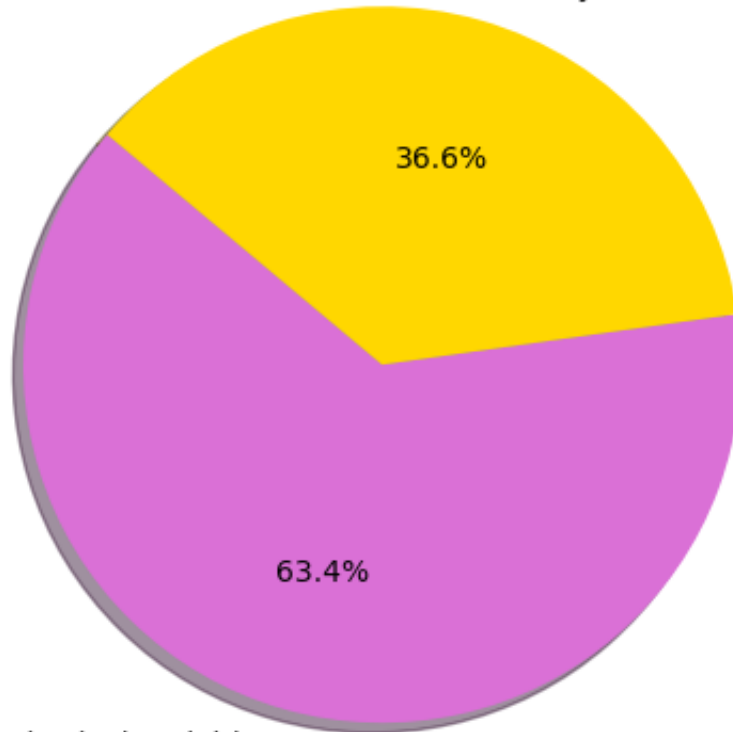
- ▶ Summer:
 - What is the relationship between key 'lifestyle' indicators and heart disease?
- ▶ Sonu:
 - How prevalent is heart disease in male vs female?
- ▶ Dylan:
 - Which locations have the highest/lowest incidence of heart disease?
- ▶ Nolan:
 - Is Covid-19 connected to heart disease? What are the effects?

Lifestyle Indicators: General Health



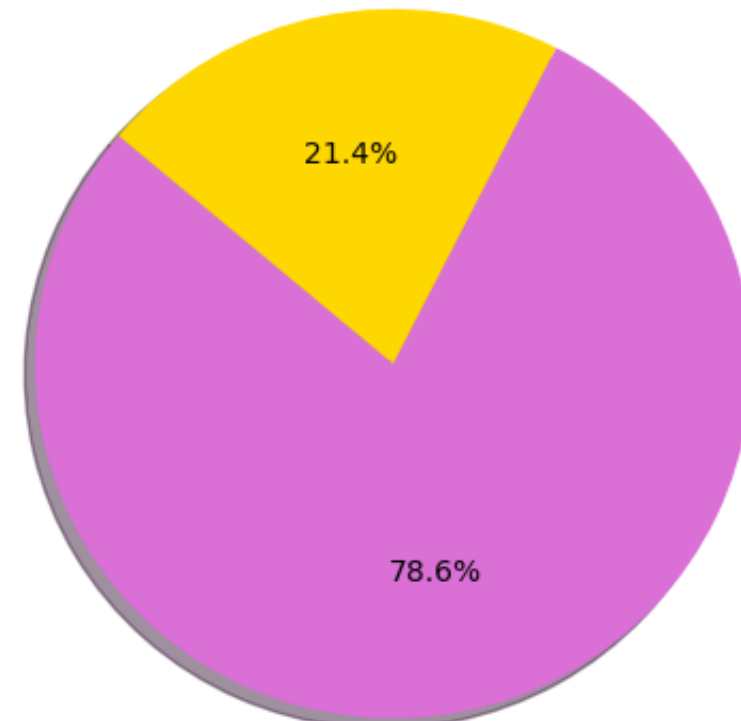
Lifestyle Indicators: Physical Activity

Physical Activity in Participants with Heart Disease
No Physical Activities



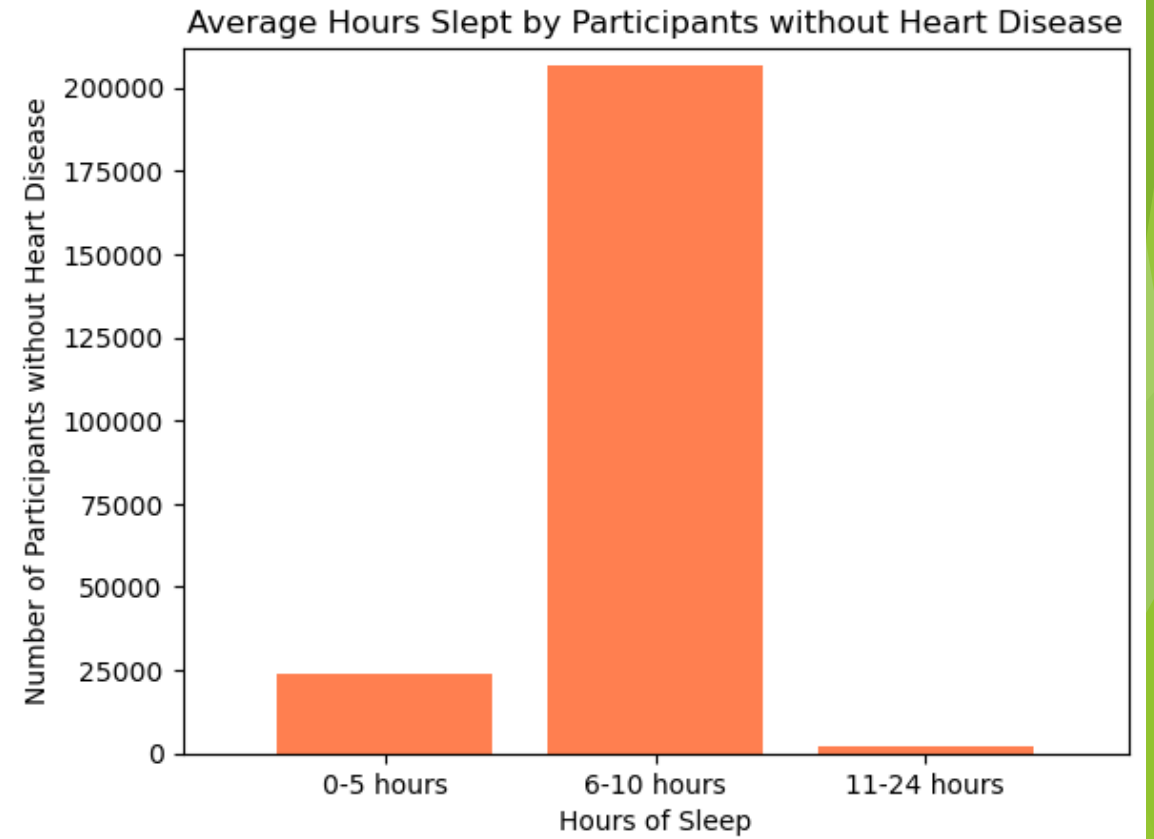
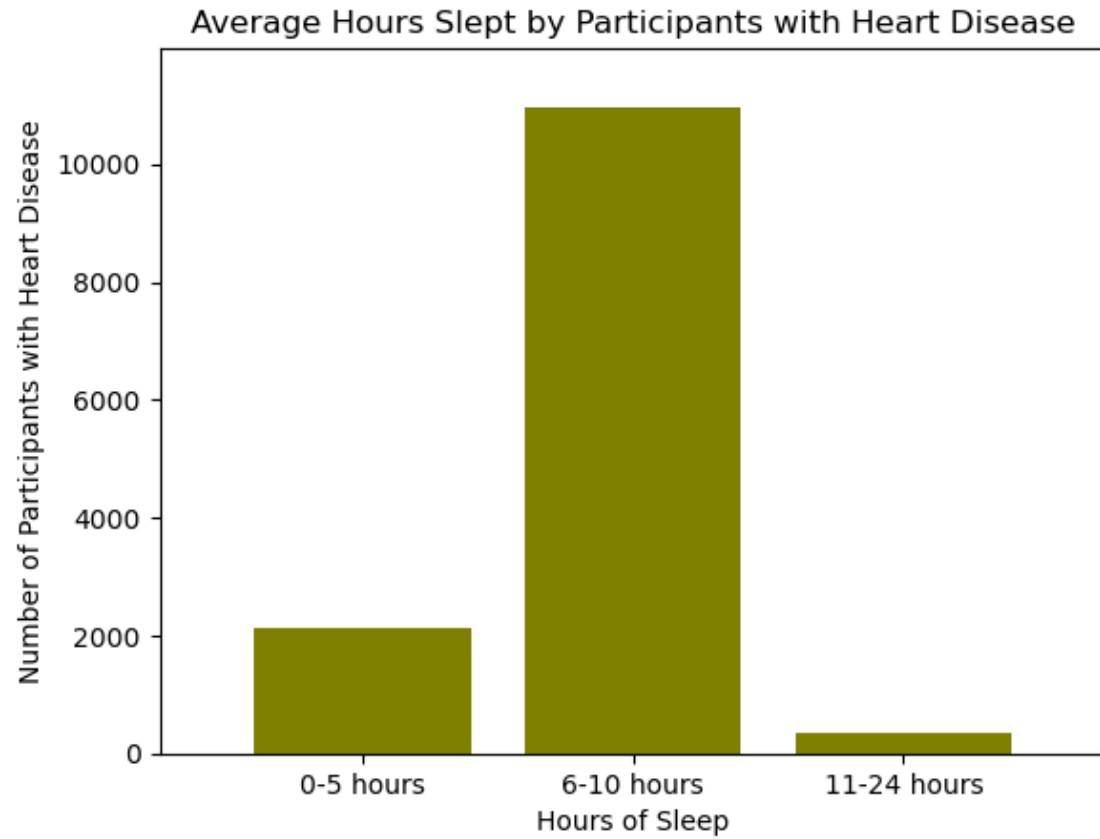
Physical Activities

Physical Activity in Participants without Heart Disease
No Physical Activities

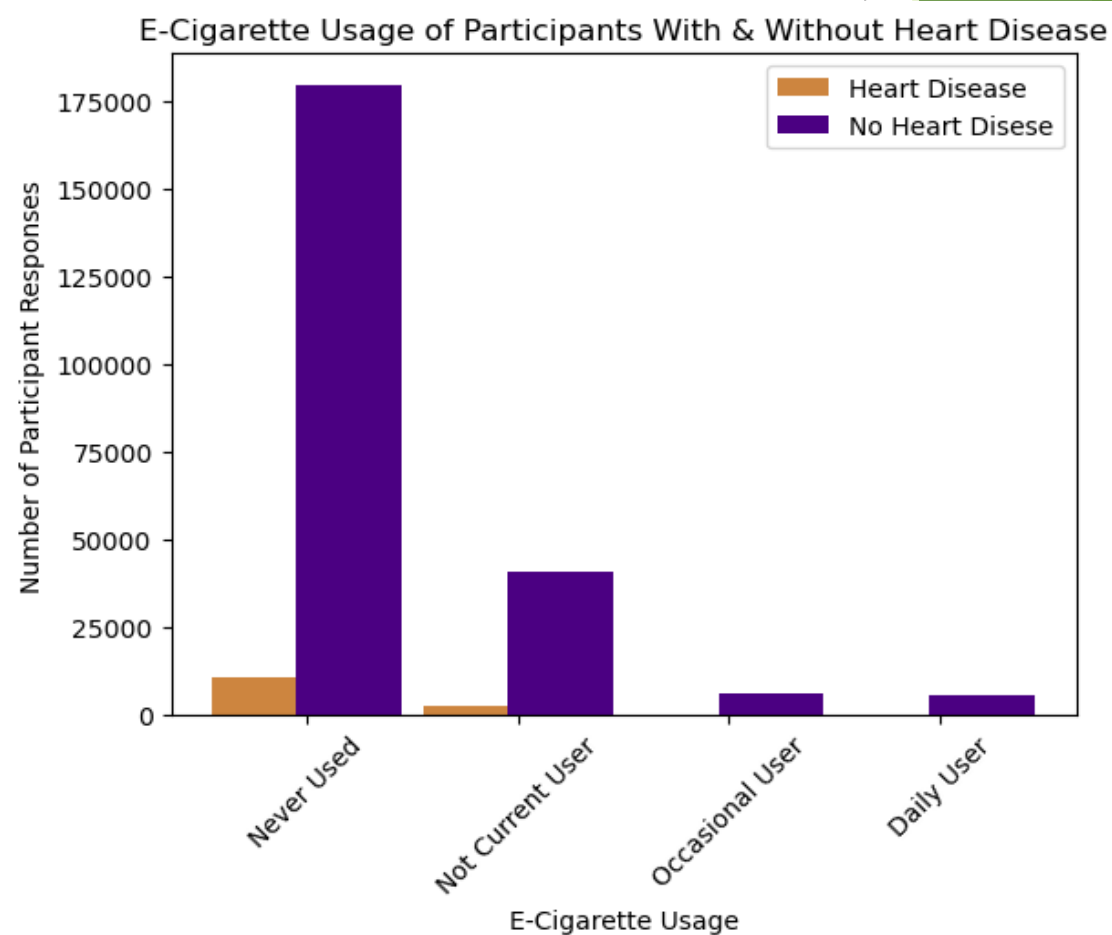
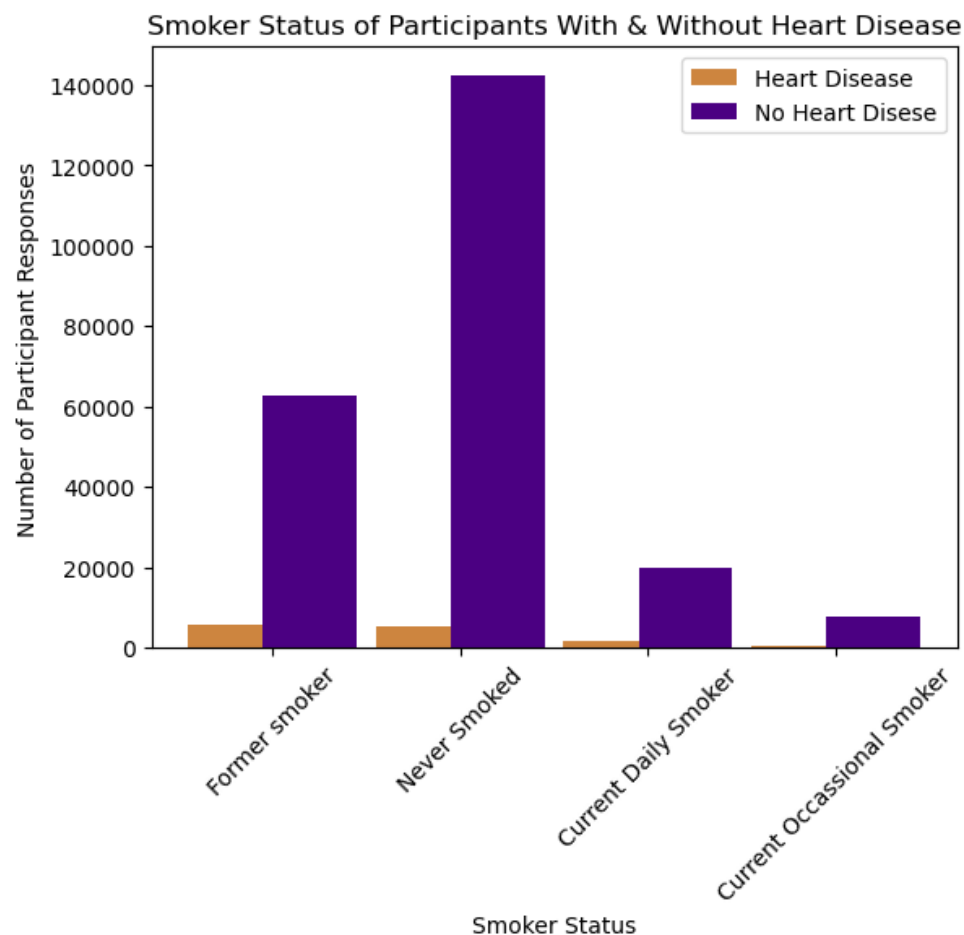


Physical Activities

Lifestyle Indicators: Sleep

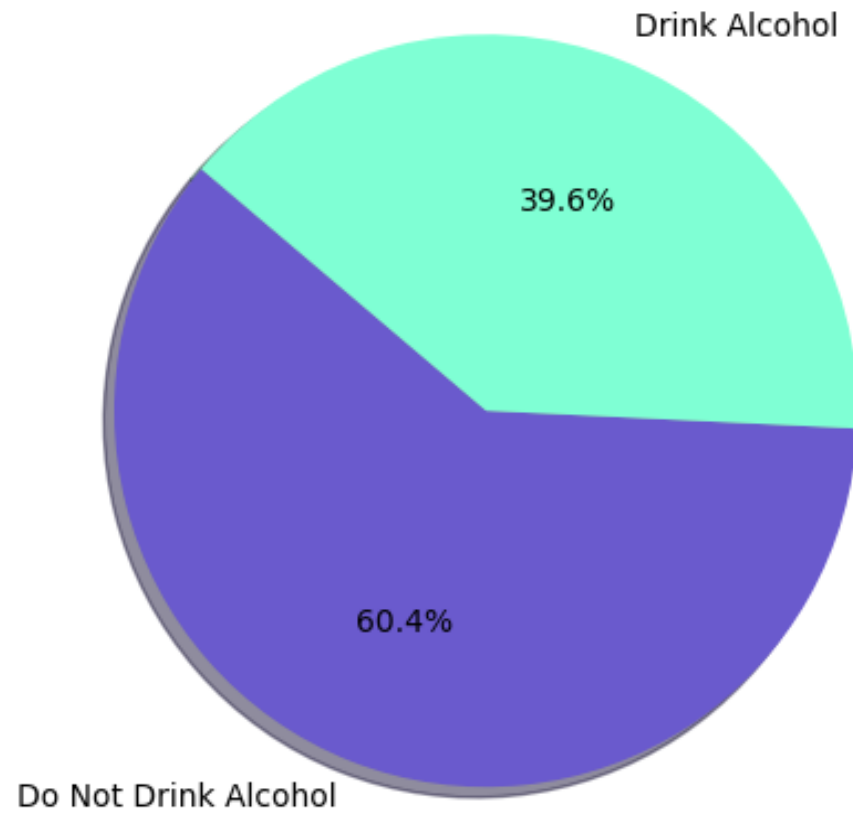


Lifestyle Indicators: Smoking & E-cigarette Usage

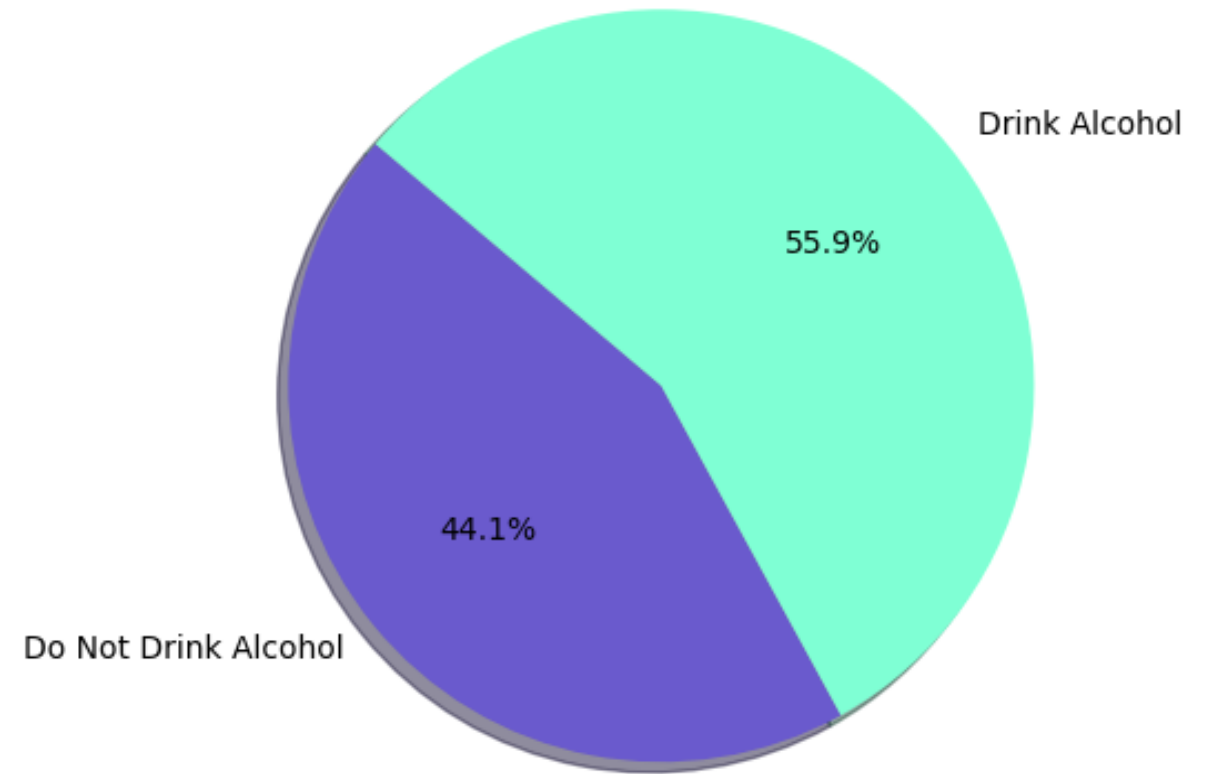


Lifestyle Indicators: Alcohol Consumption

Alcohol Consumption in Participants with Heart Disease

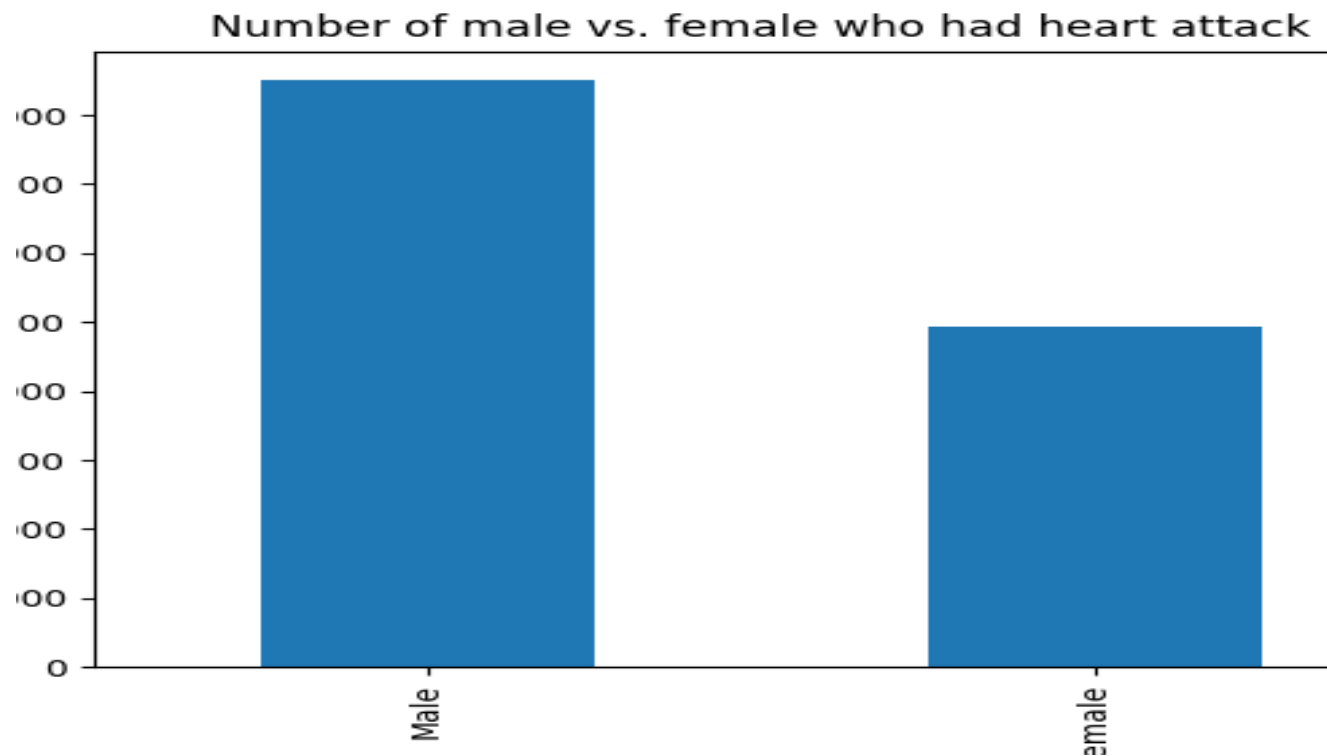


Alcohol Consumption in Participants without Heart Disease



Heart Disease - Male vs. Female - Numerical Conclusion

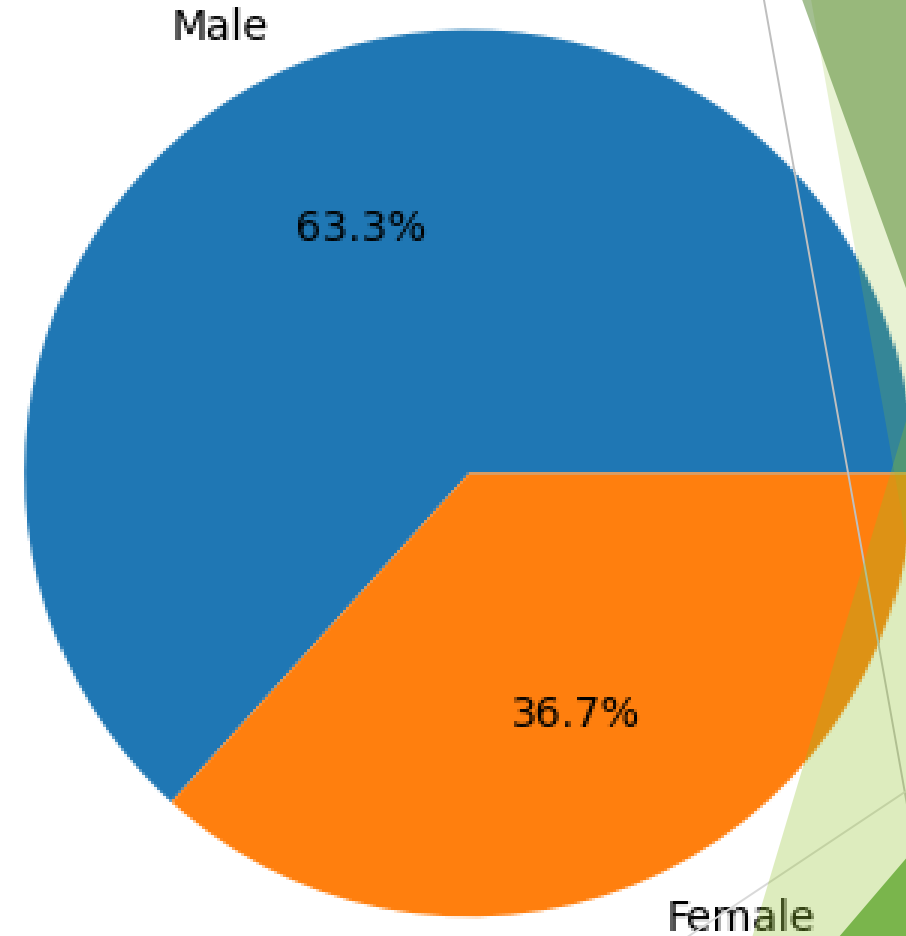
► Out of 13,435 total number of heart attacks there are 8503 males and 4932 are females.



Heart Disease - Male vs. Female - Visualization Summary

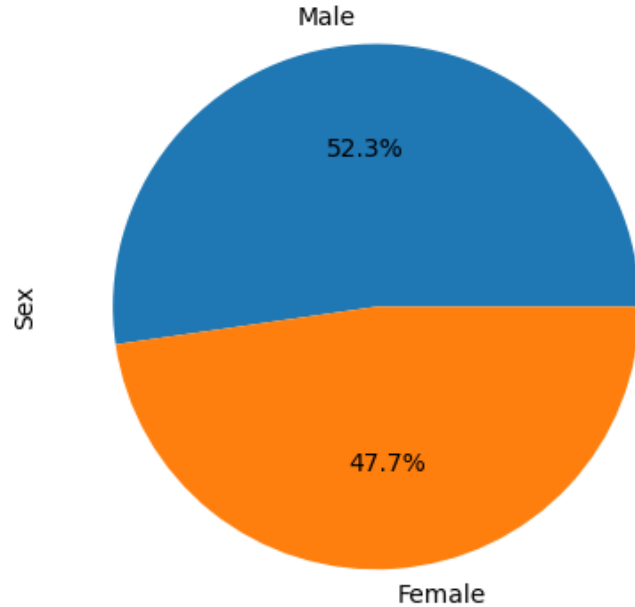
► Out of all heart attack cases, 63.3% were in male and only 36.7% in female.

Percentage of male vs. female who had heart attack



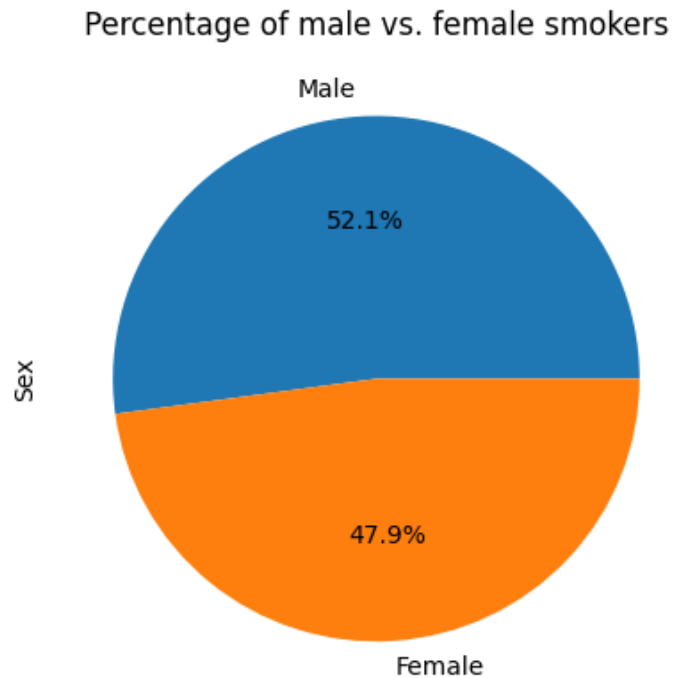
Male vs. Female - Alcohol Drinkers

Percentage of male vs. female alcohol drinkers



- Of all alcohol drinkers 52.3 are male and only 47.7% are female.

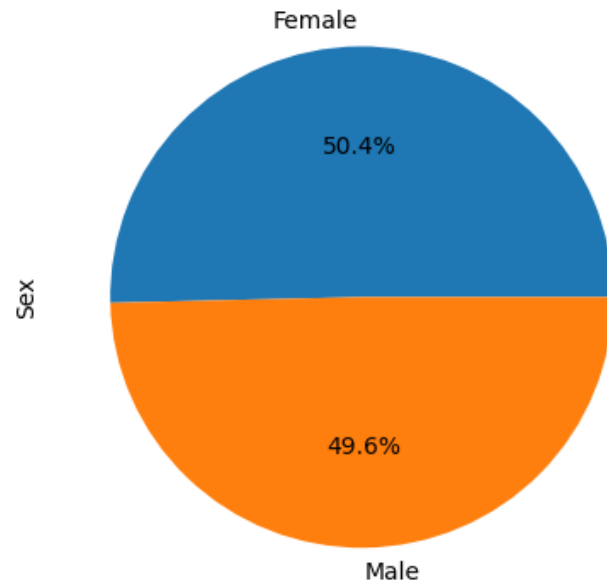
Male vs. Female - Smoker Status



- Of all patients who were smoker in past or still smoke 52.1% were male and 47.9% were female.

Male vs. Female - Physical Activity

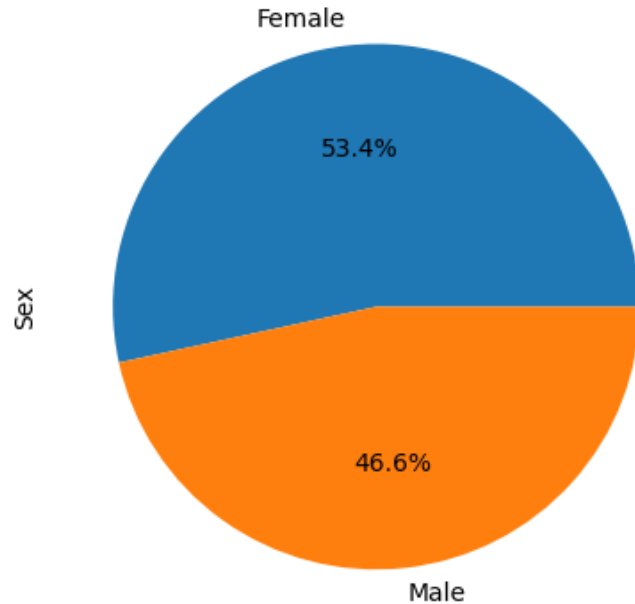
Percentage of male vs. female who are physically active



- Of all the patients females are slightly more active than males.

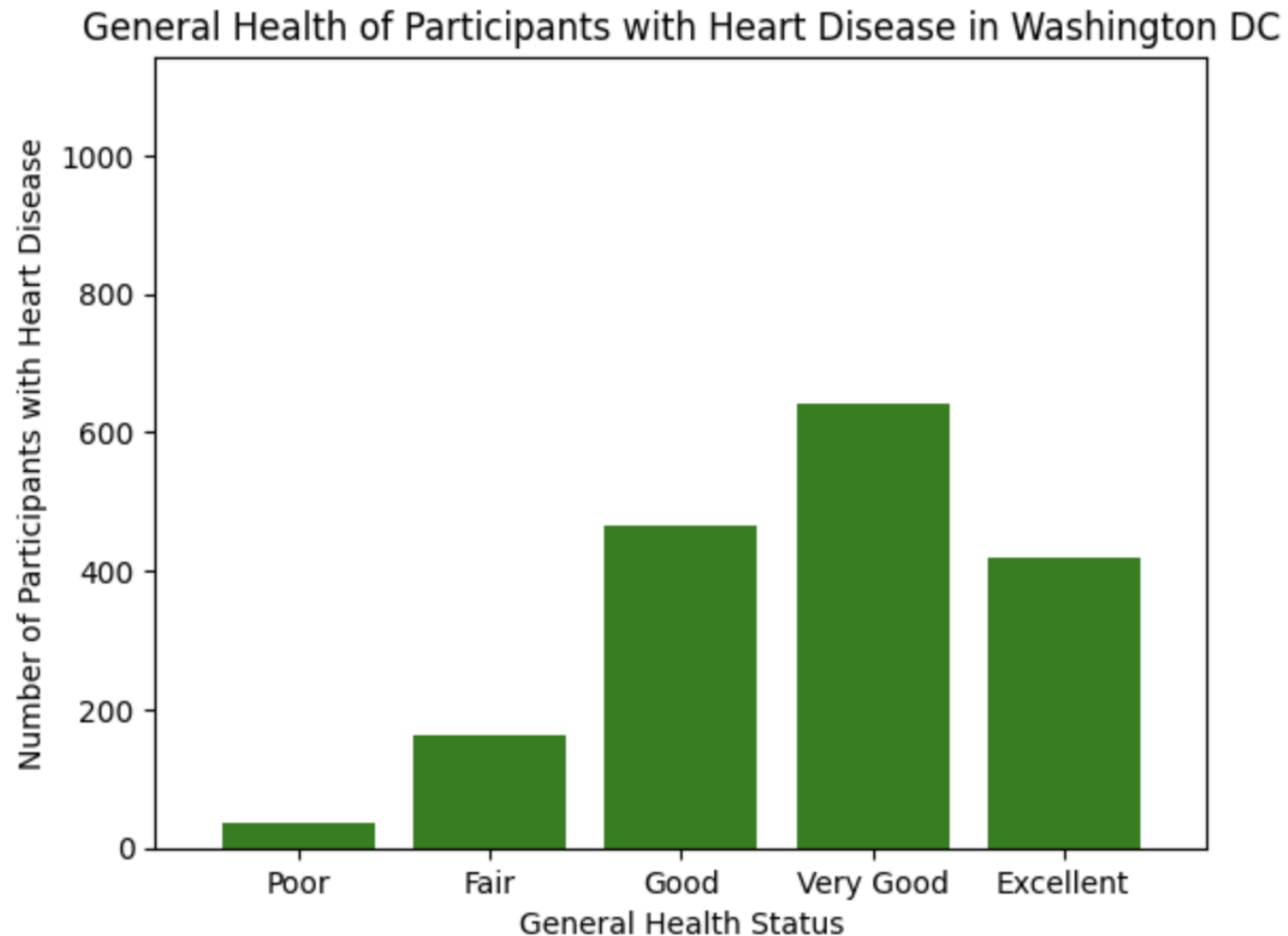
Male vs. Female - sleep ≥ 8 hours

Percentage of male vs. female who sleep ≥ 8 hours

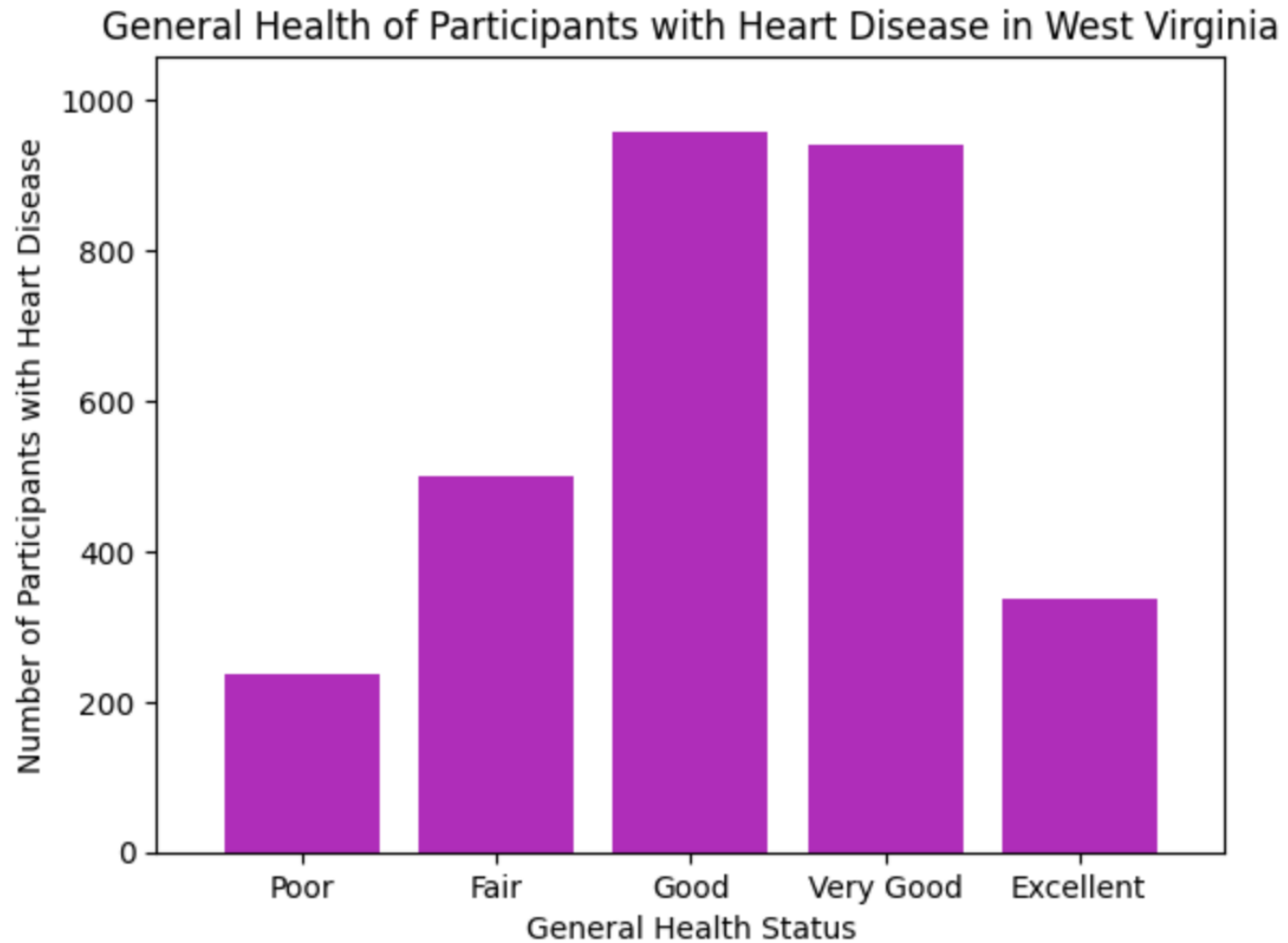


- Of all patients 53.4 females sleep for 8 or more hours, whereas only 46.6% male sleep for 8 hours or more.

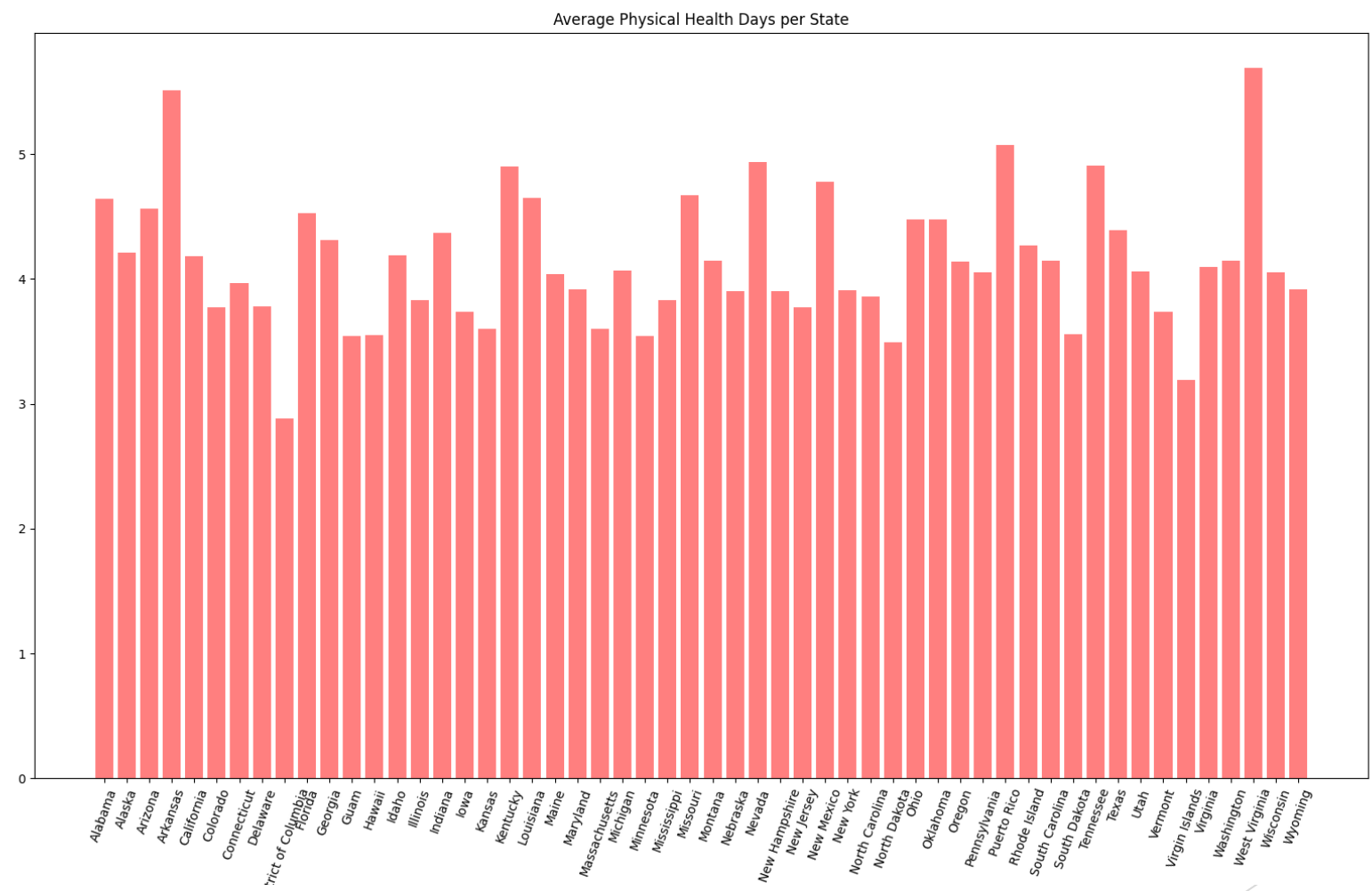
Location Indicators: Well-Being



Location Indicators: Well-Being



Conclusion Visualization Summary



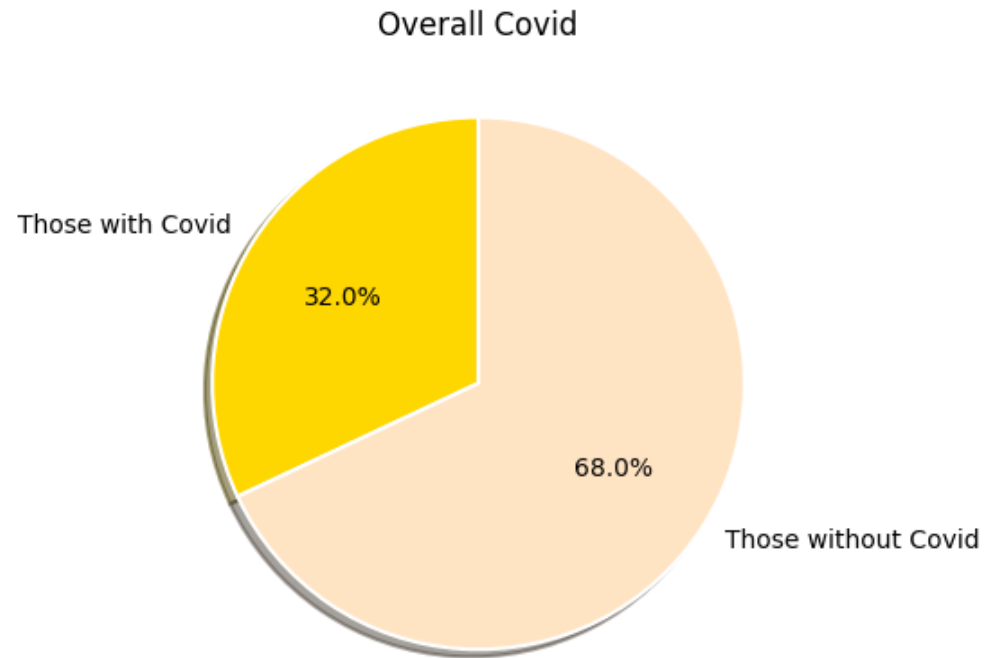
Covid Numerical Summary by Nolan

- ▶ While we didn't find too much supporting data, we non-the less have had some interesting findings with covid, it seems we are ~17% less likely to have had Covid and an Heart Attack.

Types	Percentages
Overall Covid Cases Percentage	32.00%
Covid Cases with Heart Attack	27.23%
Covid Cases without Heart Attack	32.27%
Percentage Less Likey to Have Heart Attack & Covid	16.93%

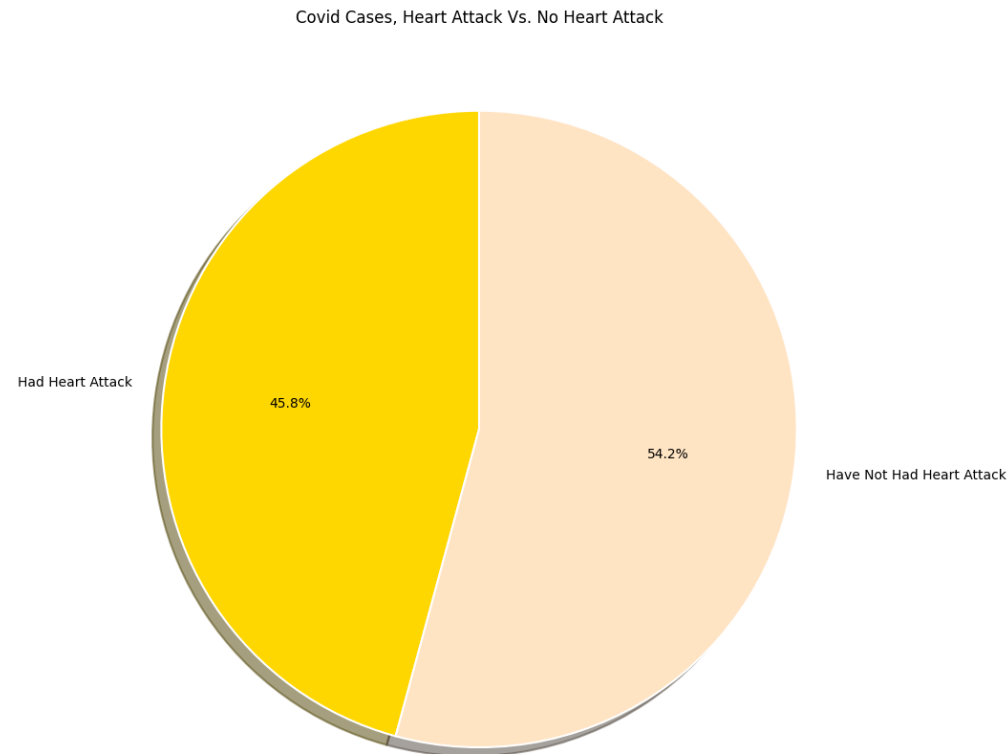
Covid Visualization

- This gives you an idea of the overall covid afflictions on the entire dataset



Conclusion Visualization Summary by Nolan

- Additionally, here is a pie graph covid cases who've had had a heart attack, and who've hadn't had one.



Implication of Findings

- ▶ While we can't come to any great conclusions, we can safely say that Covid most likely does NOT have an effect on heart health.
- ▶ Based on our findings rate of heart attack in males is higher than females.
- ▶ People with heart disease do not feel their general health is great.
- ▶ Physical activity has a significant role to play in preventing heart disease.
- ▶ Sleep does not impact the chances of a person having heart disease.
- ▶ Smoking increases the risk of heart disease slightly while e-cigarettes are not as much of a risk factor.
- ▶ Alcohol consumption does not significantly increase the risk of heart disease.





References

- ▶ American Heart Association. “About Heart Attacks.” *Www.heart.org*, 31 July 2016, www.heart.org/en/health-topics/heart-attack/about-heart-attacks. Accessed 16 May 2024.
- ▶ CDC. “About Heart Disease.” *Heart Disease*, 29 Apr. 2024, www.cdc.gov/heart-disease/about/index.html. Accessed 16 May 2024.
- ▶ Cleveland Clinic. “Heart Disease: Symptoms, Risk Factors & Treatment.” *Cleveland Clinic*, 1 Sept. 2022, my.clevelandclinic.org/health/diseases/24129-heart-disease. Accessed 16 May 2024.