

**Group 2 Presents:**

# **HEART DISEASE**

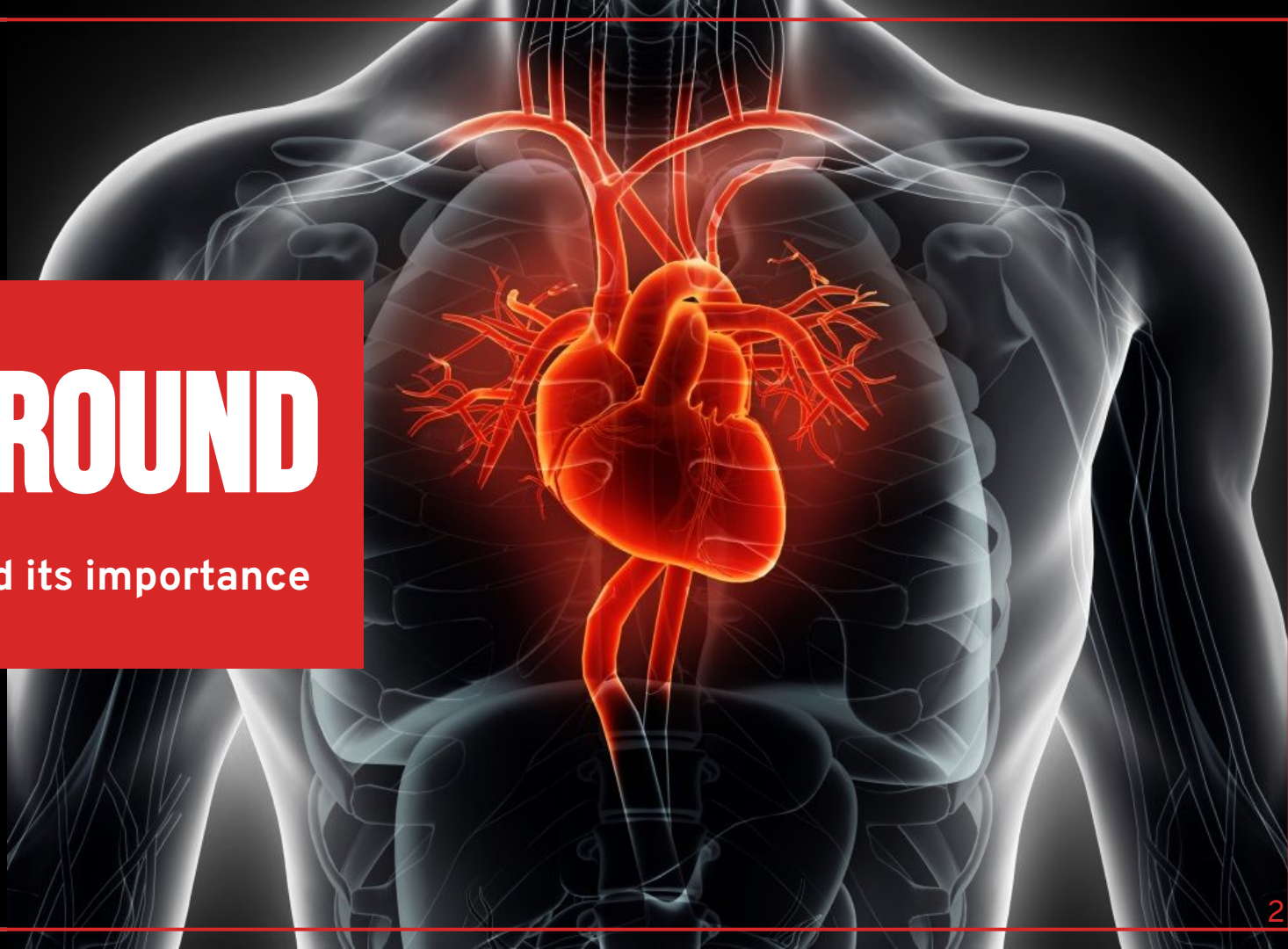
# **ANALYSIS & PREDICTION**

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**Group members:** Jacob Camarillo, Rujun Yan, Jiahao Yan

# BACKGROUND

Heart disease and its importance



# WHY IT'S IMPORTANT



- **What is heart disease?**

- A.K.A cardiovascular disease, including but not limited to coronary artery disease(CAD), myocardial infarction and myocarditis.

- **Why should we be aware of heart disease?**

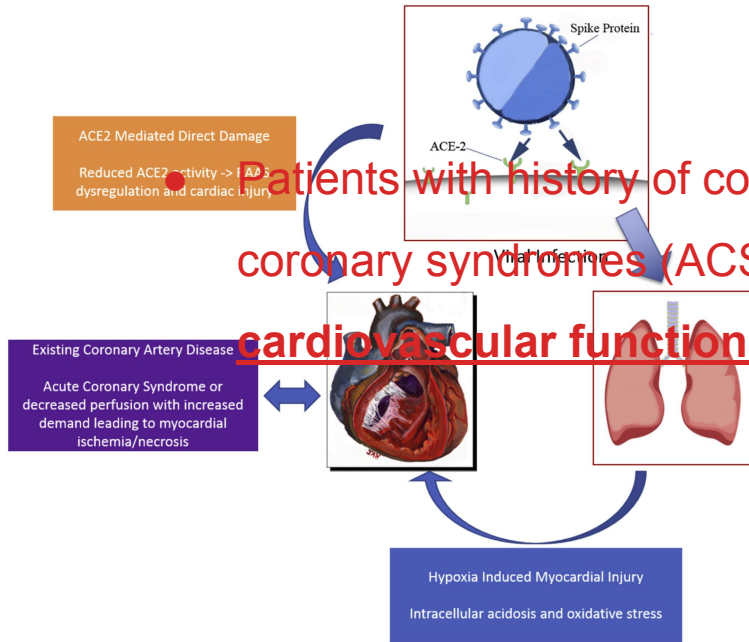
- Top leading cause of death in the US, **~700,000** people die of heart disease
- **~805,000** Americans have a heart attack each year.
- Myocarditis caused by COVID-19 resulted in multiple sudden deaths of young men **aged from 15 to 40** in China.

# LITERATURE REVIEW



# COVID-19

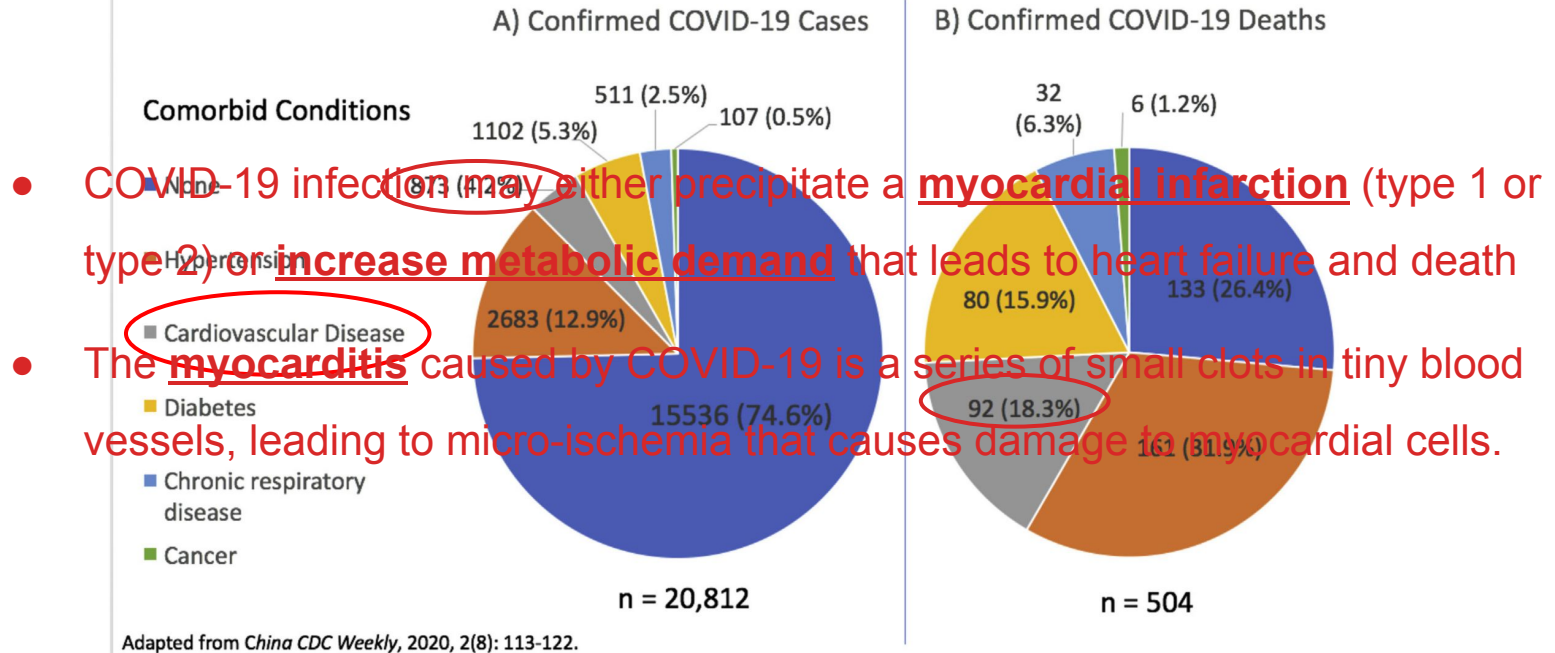
## PATIENTS WITH UNDERLYING HEART DISEASE ARE MORE SUSCEPTIBLE



- ACE-2 is expressed in the heart, and the virus uses it as a receptor for entry into the cell.
- COVID-19 may cause cardiac injury indirectly due to reduced or impaired immune inflammatory response and cytokine storm.
- Severe hypoxia from acute respiratory damage caused by the virus may result in oxidative stress and myocardial injury from increased myocardial oxygen demand.

# COVID-19

## THE SEQUELA CAN BE FATAL



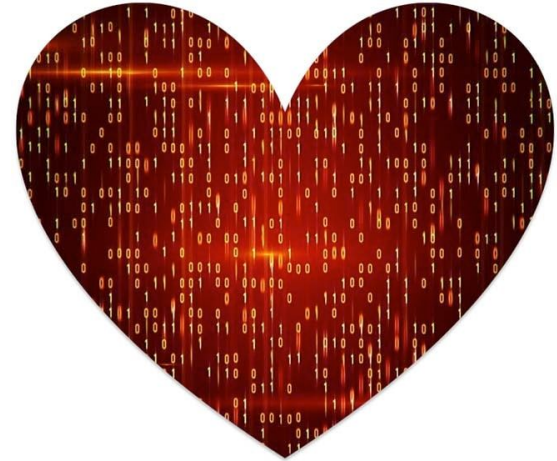




# **DATASET OVERVIEW**

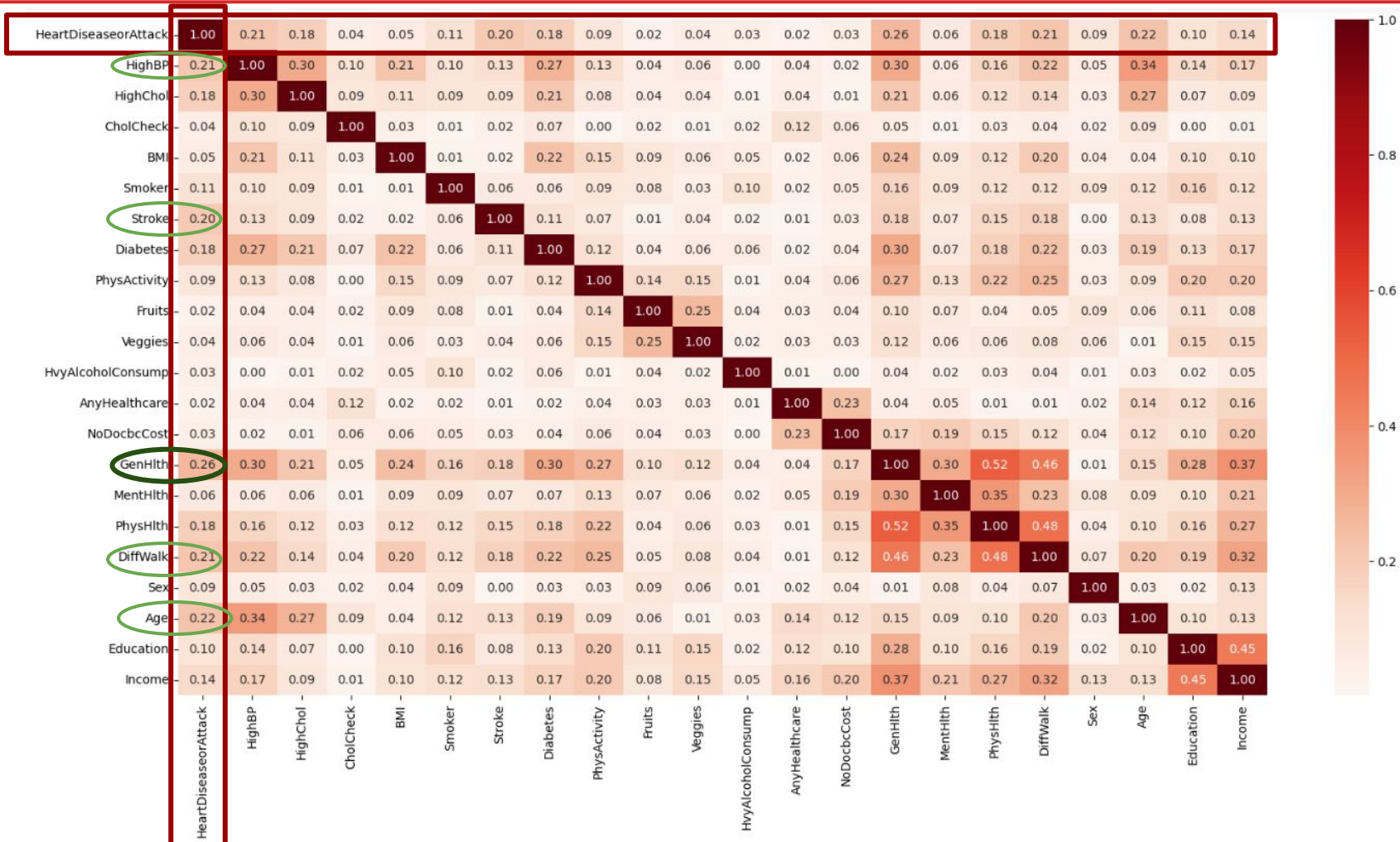
# DATASET OVERVIEW

- The dataset is a Kaggle dataset of Heart Disease and Stroke Prevention in 2015
- The CDC collects responses from over 400,000 Americans on health-related risk behaviors, chronic health conditions, and the use of preventative services
- Has in total 253,680 entries and 21 features

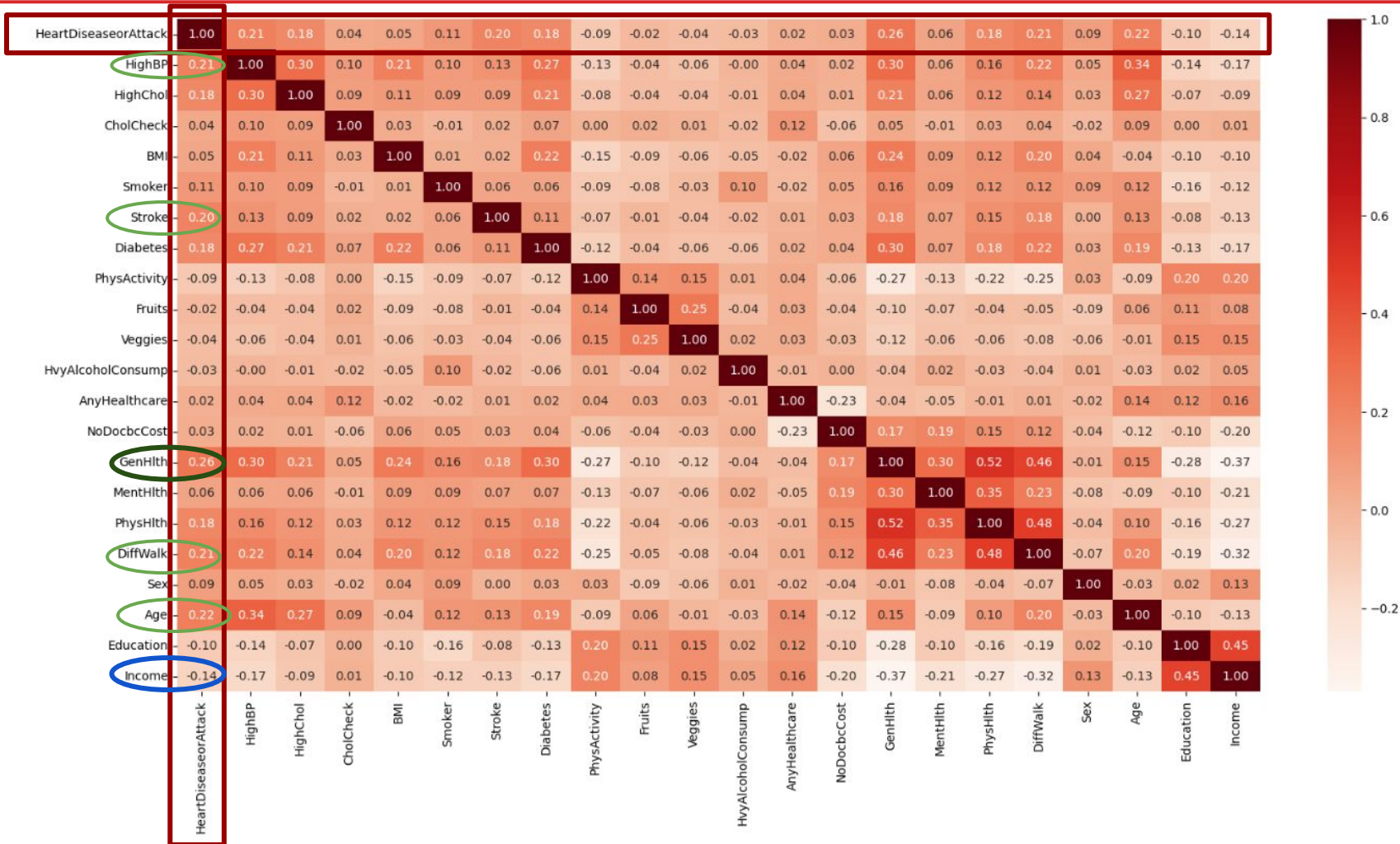




# DATA ANALYSIS







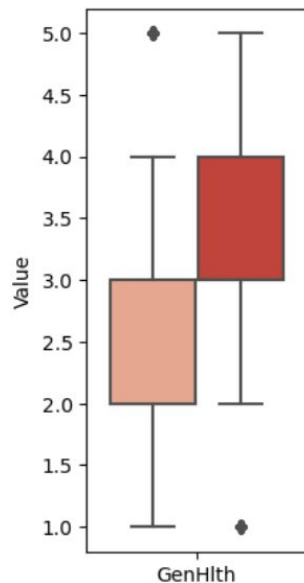
# FEATURES: A CLOSER LOOK

Heart Disease

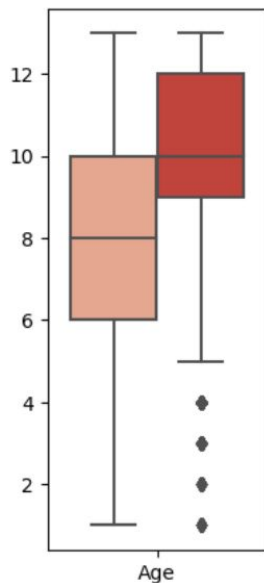
No

Yes

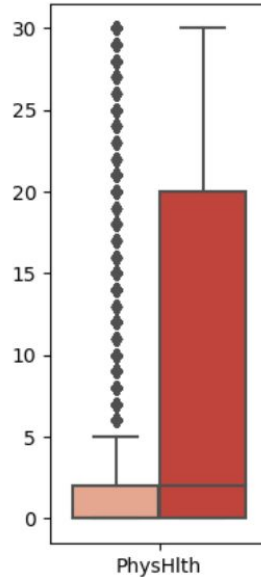
Correlation: 0.26



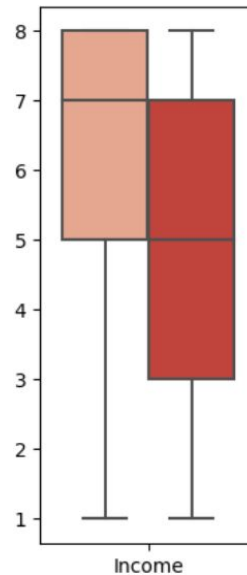
0.22



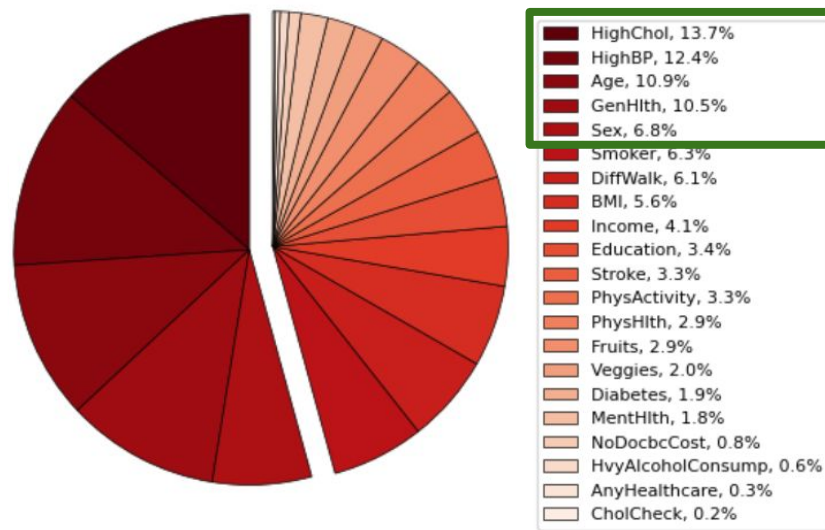
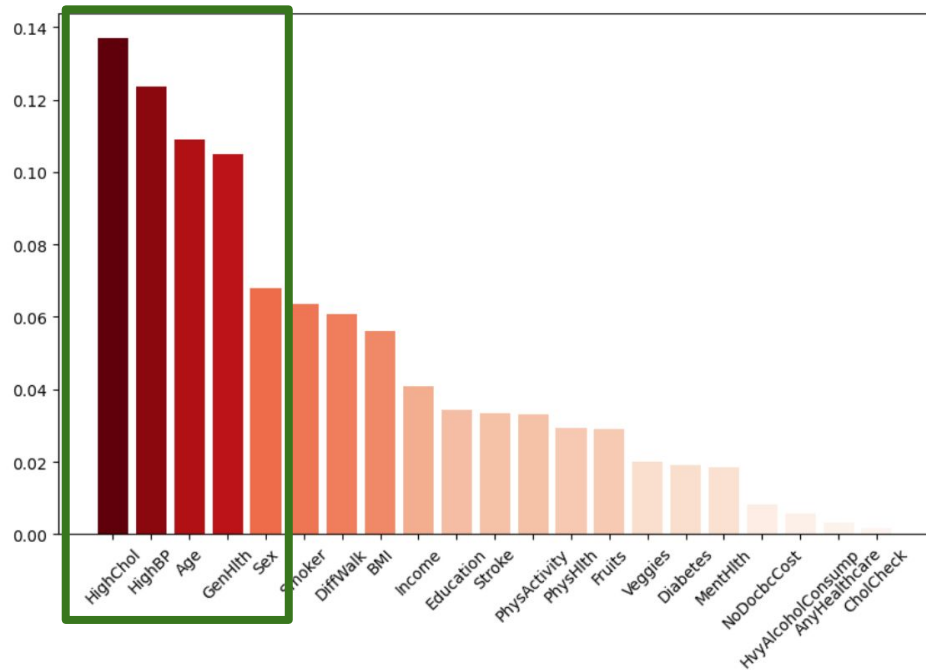
0.18



-0.14



# MOST IMPORTANT FEATURES





**WEBPAGE**



# WEBPAGE DEVELOPMENT

## Heart Disease Probability Calculator

Do you have high cholesterol?  
 ▾

Do you have high blood pressure?  
 ▾

How is your general health?  
 ▾

How old are you?

What is your gender?(0.0:male,1.0:female)  
 ▾

**The predicted chance of having heart disease is 60.37%.**

# WEBPAGE DEVELOPMENT



The screenshot shows a web browser window with a dark theme. The page title is "Heart Disease Probability Calculator". The form contains the following fields and labels:

- Do you have chest pain? (radio buttons: Yes, No)
- Do you have high blood pressure? (radio buttons: Yes, No)
- How is your general health? (radio buttons: Good, Bad)
- How old are you? (text input field)
- What is your gender? (radio buttons: Male, Female)

Below the form is a "Calculate" button. The result displayed at the bottom of the page is: "The predicted chance of having heart disease is 37.68%."



**THANK YOU!**

