CHD Risk Factor Analysis

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Flow

Analyze Smoking vs CHD

01

Analyze Age vs CHD

02

Analyze Cholesterol vs CHD. Does it vary with Sex? Smoking?

03

Analyze BMI vs CHD. Does it vary with Sex? Smoking?

04

General Trends

Interesting Findings

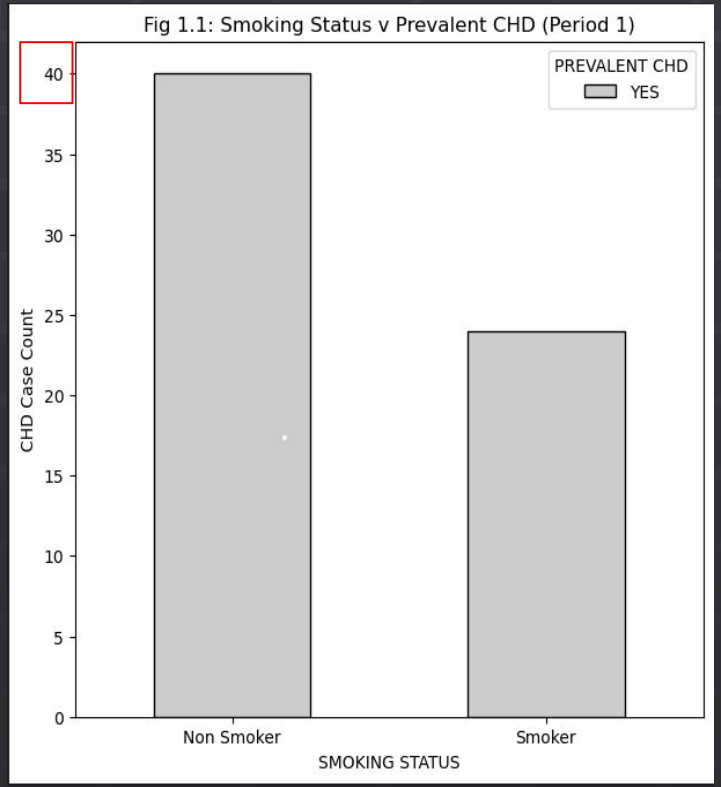
- 2754 participants were included in our final; analysis each completing 3 periods of testing.
    - 1549 participants were female and 1208 were male
- In both periods, the majority of the participants were non-smokers
- Known risk factor such a total cholesterol and BMI exhibited minimal variation form period 1 to 3
- The number of participant with CHD rose from ***64 in period 1 to 300 in period 3***.
- Approximately **85% participants** in both period could be categorized as being healthy / overweight

01

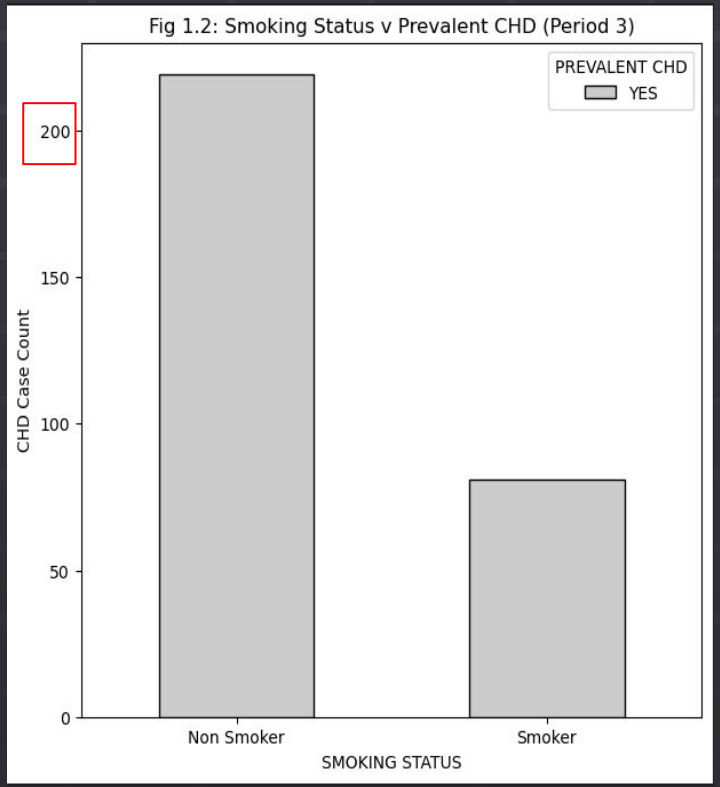
Smoking v CHD

Smoking vs Prev CHD: Is there a correlation between participants' smoking status and CHD?

Potential correlation between smoking and CHD?



Period 1



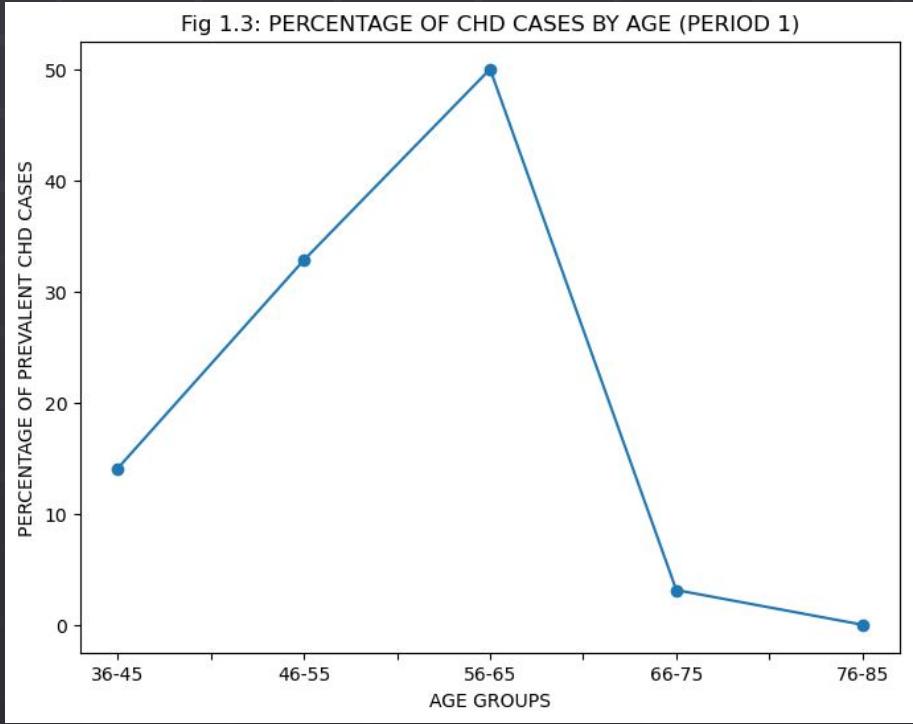
Period 3

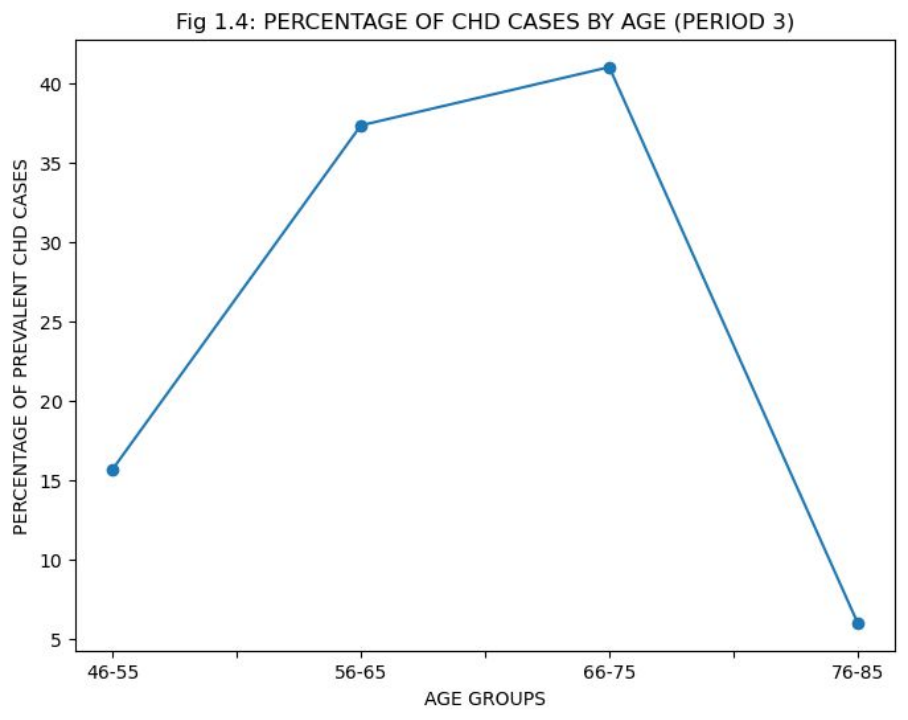
02

Age vs CHD

What is the distribution of age among prevalent CHD cases and what does this mean?

What about the distribution in Age v CHD...





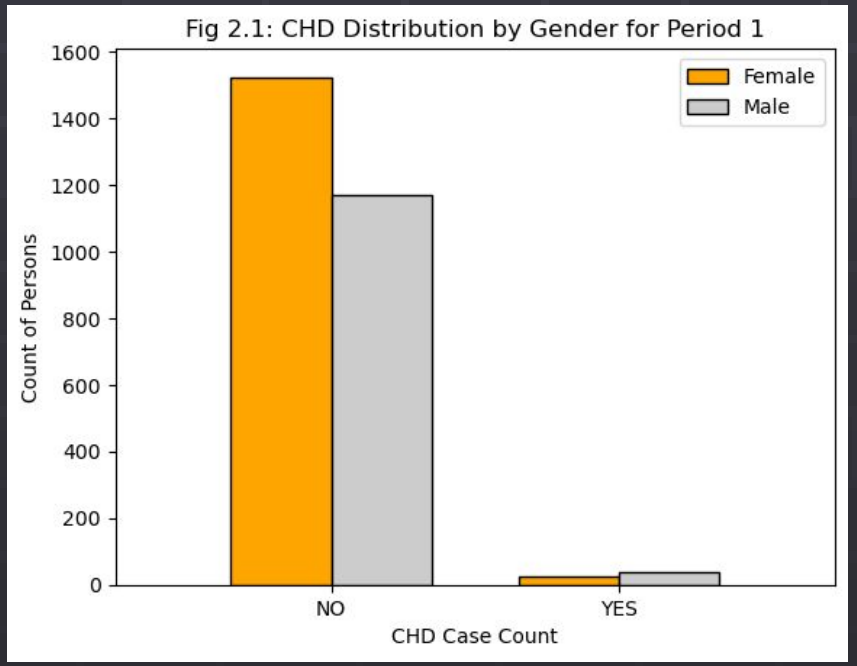
A sharp rise in CHD Cases for Age group 66-75 in Period 3

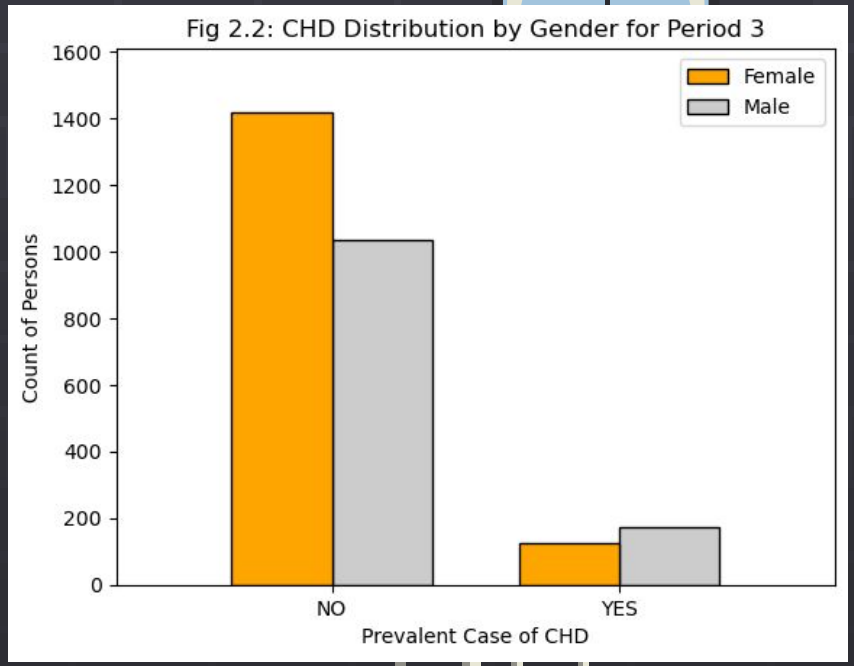
03

Total Cholesterol vs CHD

What is the distribution of total cholesterol amongst participants with CHD? Does it vary across sexes? Smoking status?

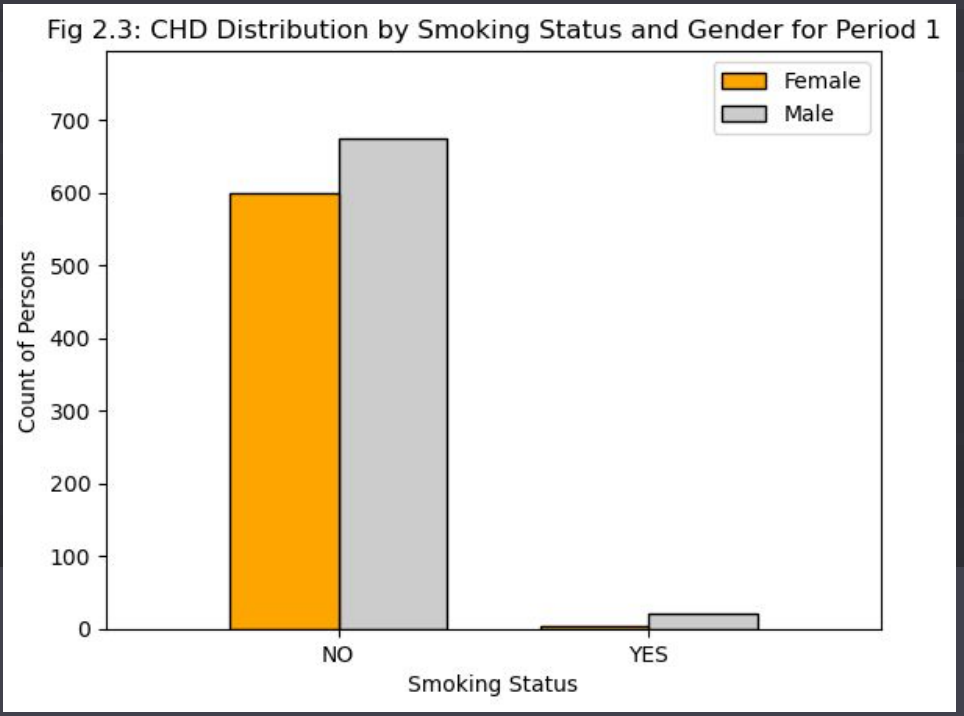
Viewing CHD distribution by Sex

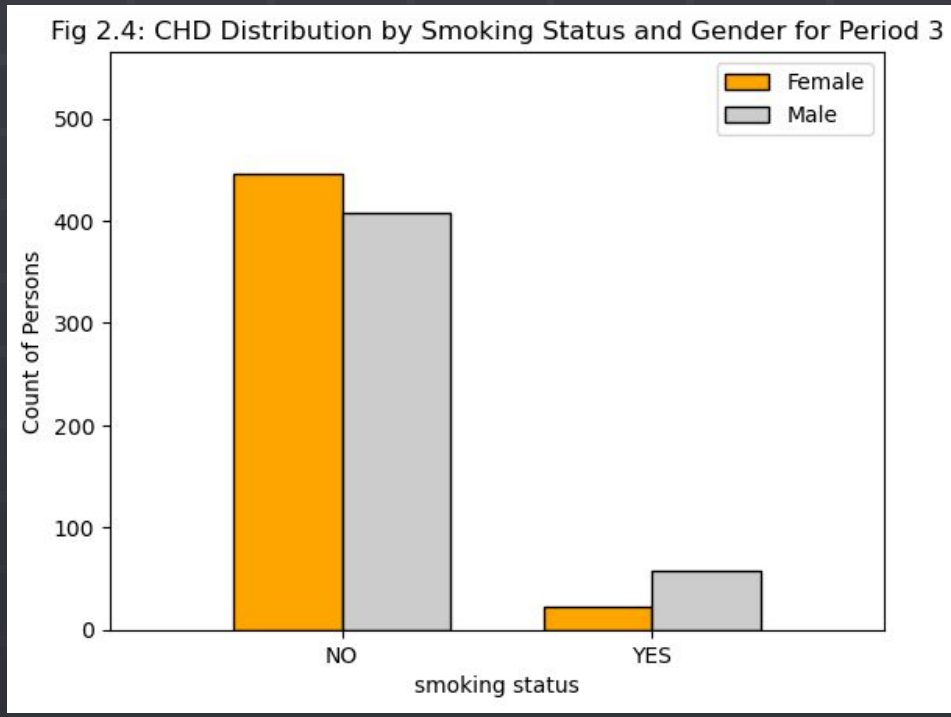




Increase of CHD in both sexes ...

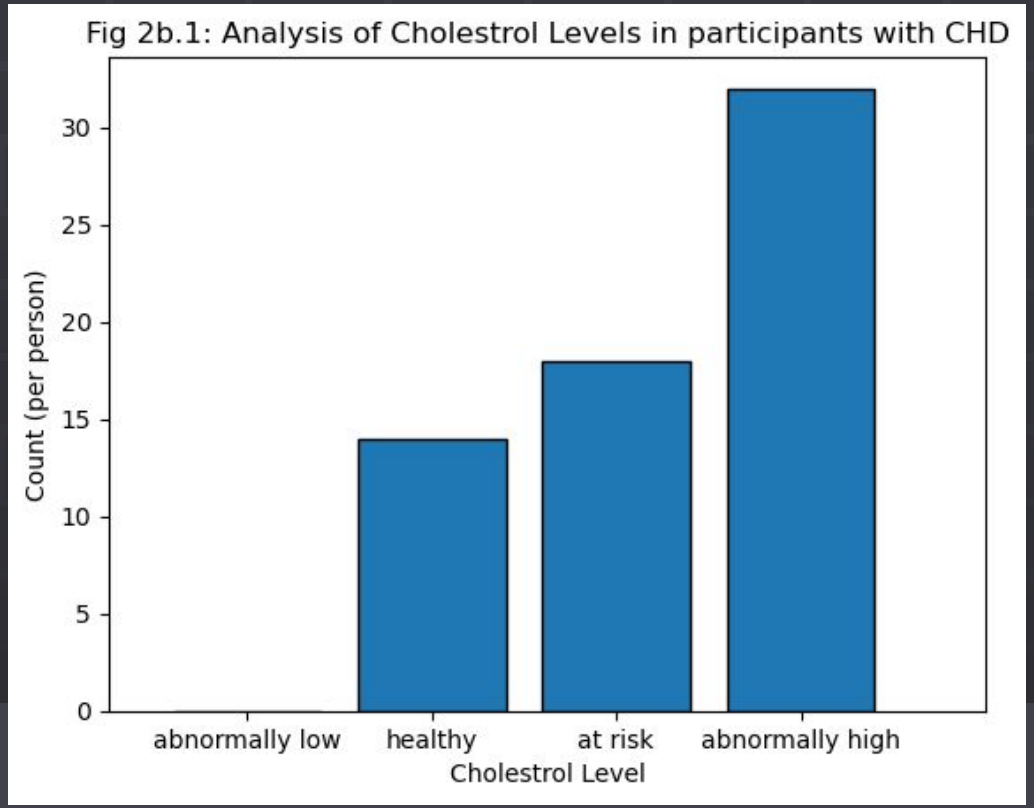
But a drop in smokers...





Cholesterol Levels and CHD

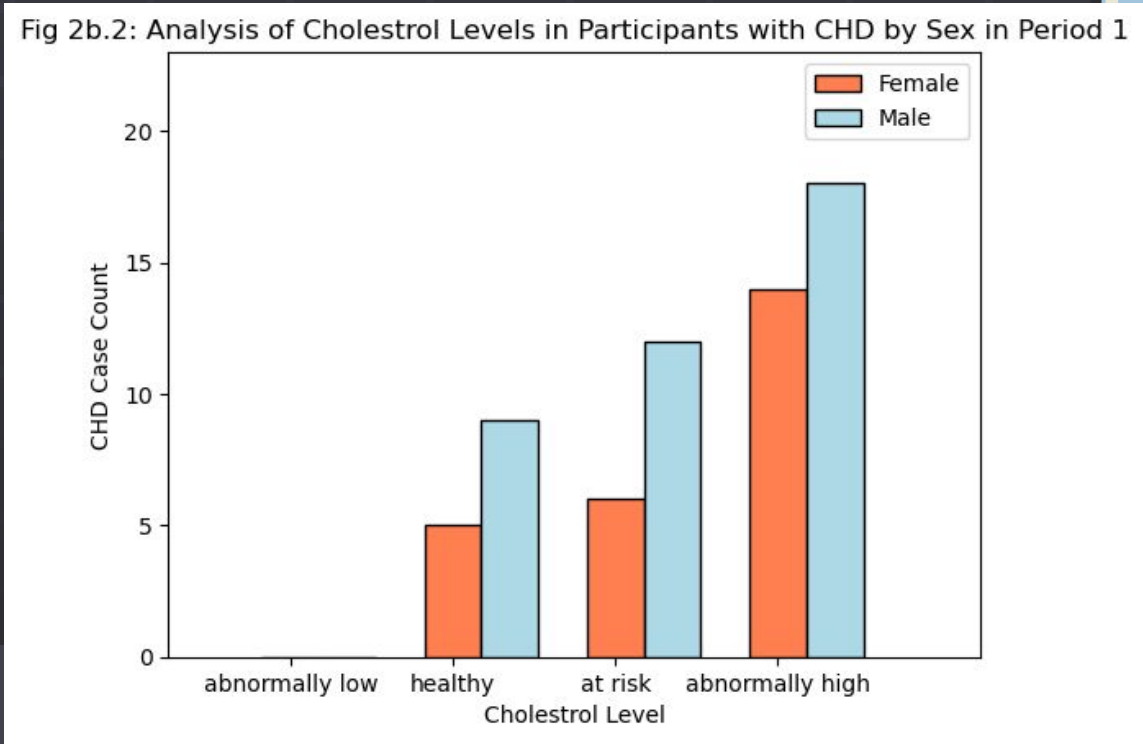
CHOLESTEROL LEGEND
< 120mg/dL = abnormally low
120-200mg/dL = healthy
200-239mg/dL = at risk
240mg/dL = abnormally high



- The greater the cholesterol, the greater the CHD case's
- Zero cases of 'abnormally low'
- 'Abnormally high' is the same count as 'healthy' and 'at risk' counts (32)

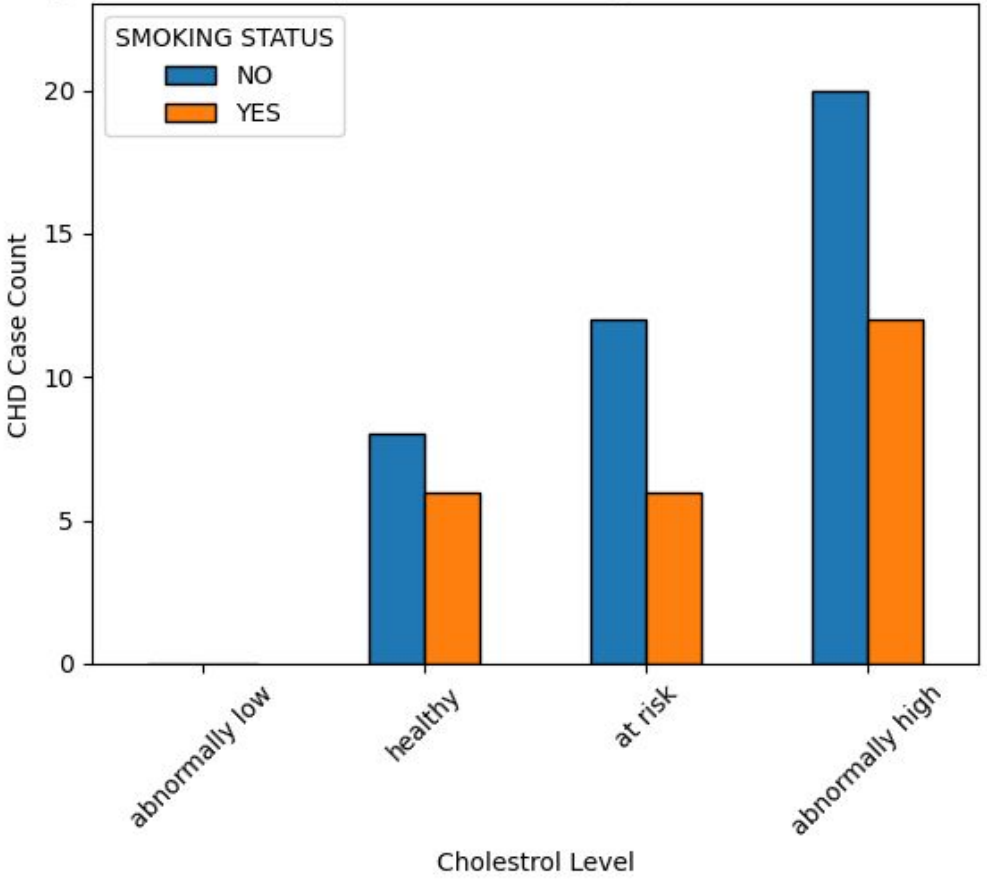
Cholesterol Distribution by Sex

- Reminder: More males with CHD
- Relatively even distribution across both sexes for cholesterol patterns

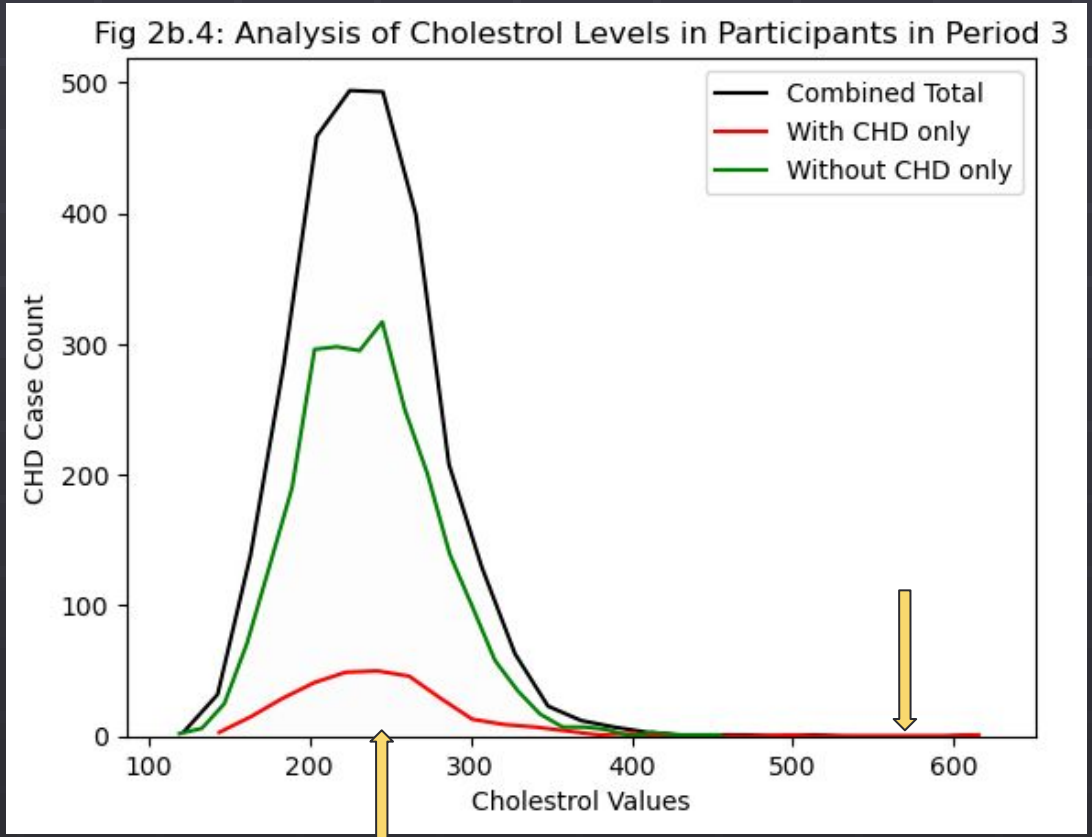


What if we view cholesterol levels in CHD participants by Smoking status...

Fig 2b.3: Relationship between Smoking, CHD and Cholestrol levels

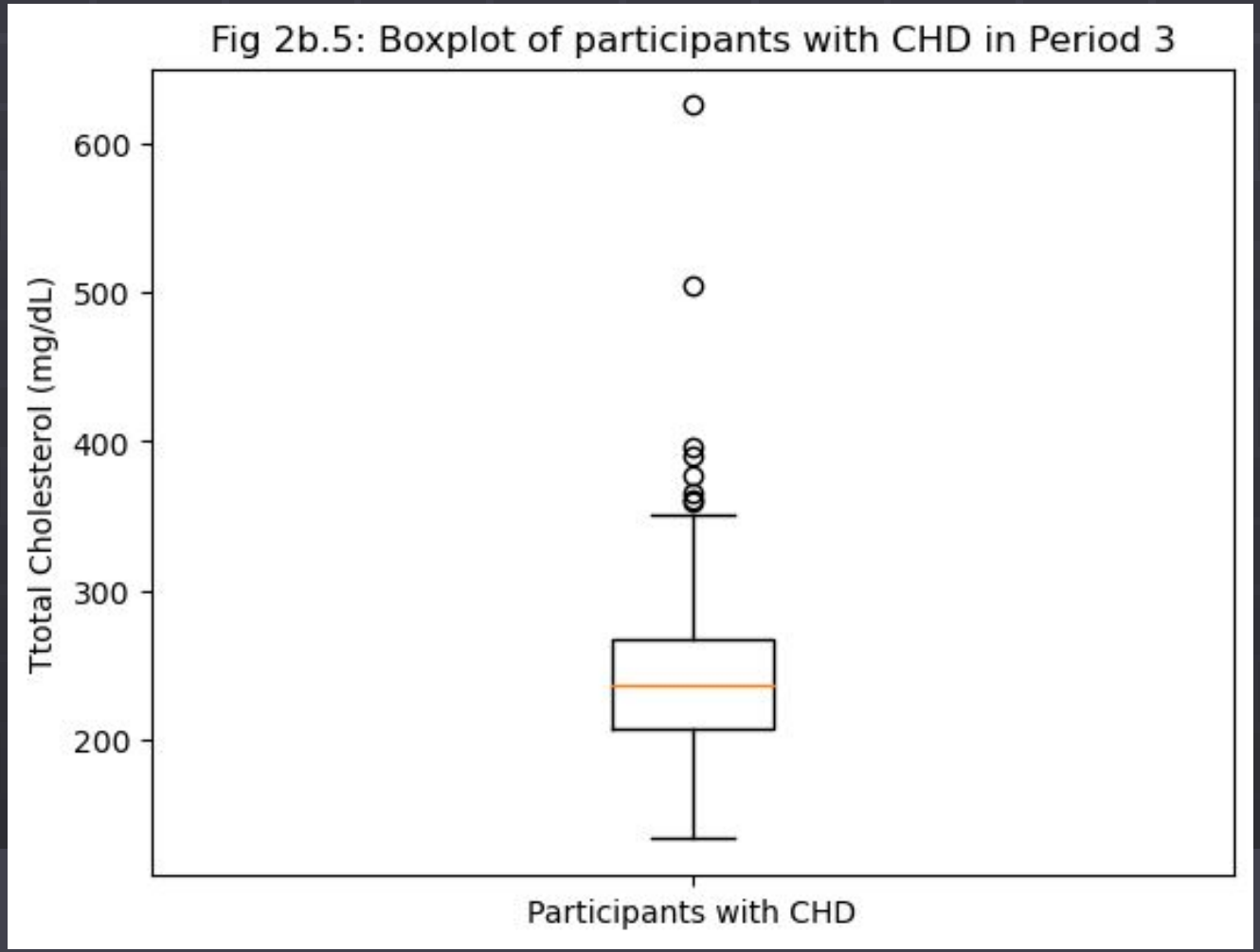


For all 3 distributions, Peak is around the same cholesterol levels...



However, despite the lower count of CHD relevant cases, we see there's still those CHD participants whose cholesterol is abnormally high

Potential outliers?



Box plot reveals that is the case

- **8 Outliers, all of which surpass only upper-bound**

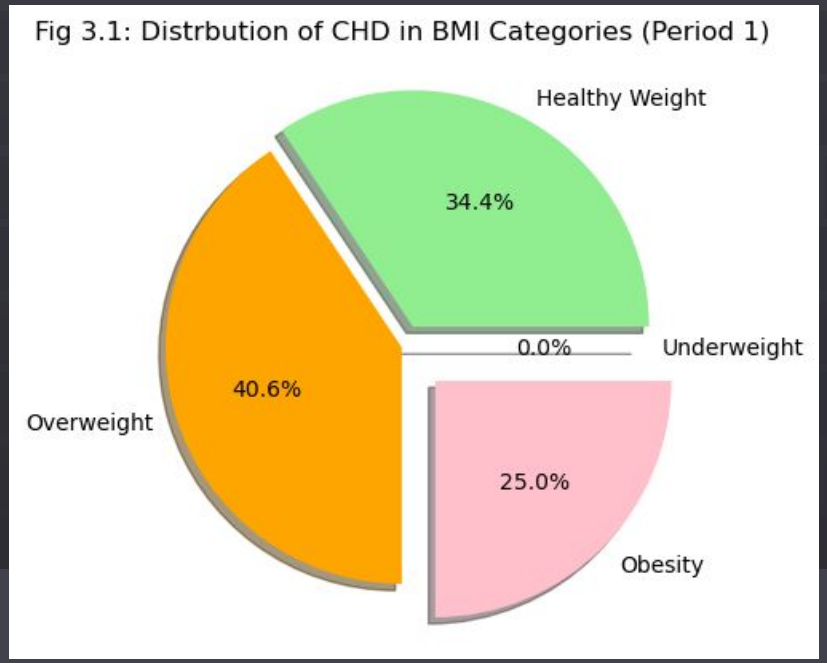
04

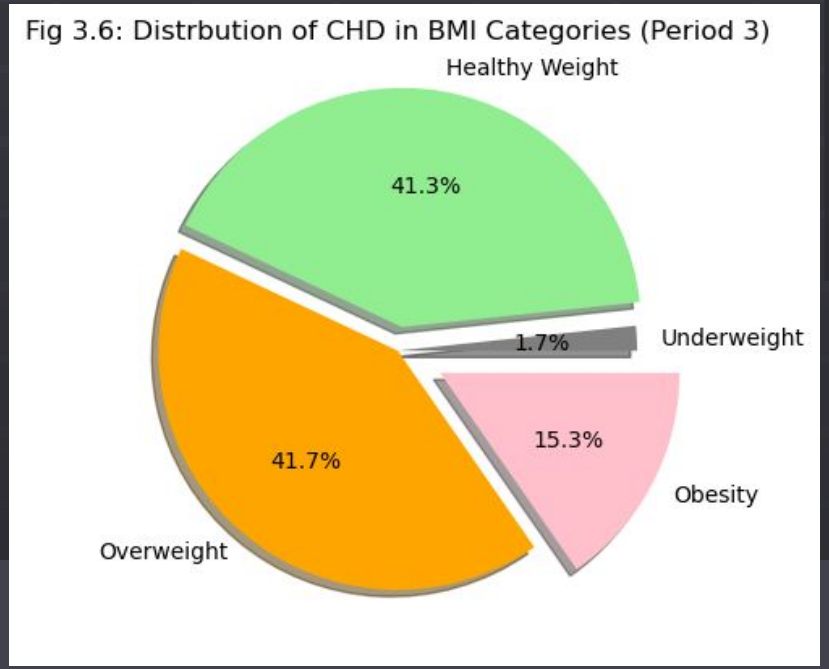
BMI vs CHD

What is the distribution of BMI distribution amongst participants with CHD? Does it vary across sexes? Smoking status?

Observation:

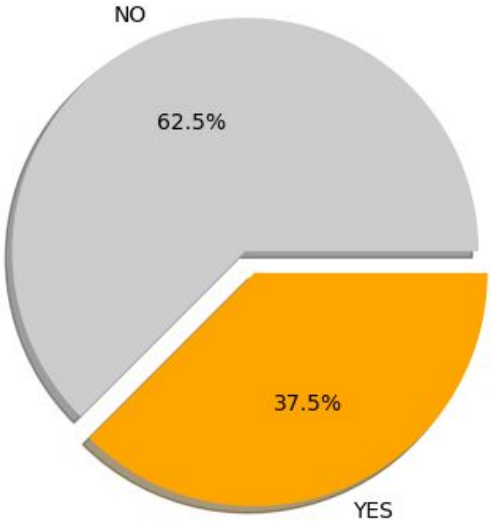
- Majority of participants with CHD fall into the Healthy Weight and Overweight category
- Overweight category leads in the % of CHD – even by a small difference.



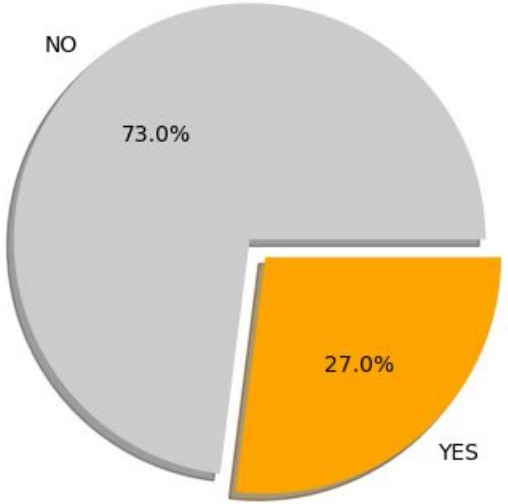


Observation: Non-smokers had a higher rate of CHD than smokers in both periods

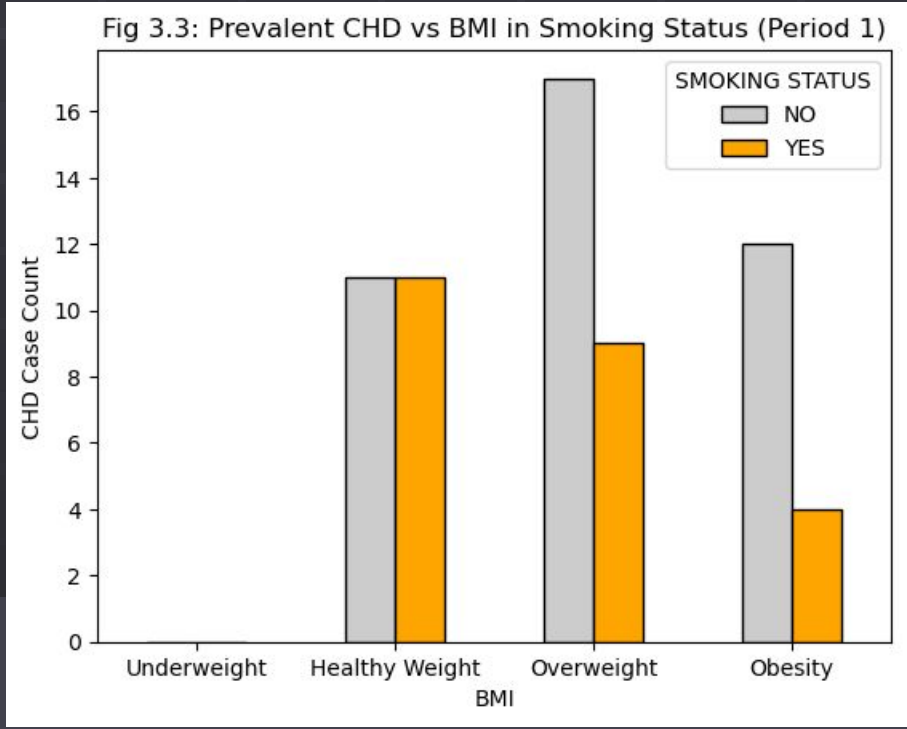
Fig 3.2: Distribution of CHD in Smoking status (Period 1)

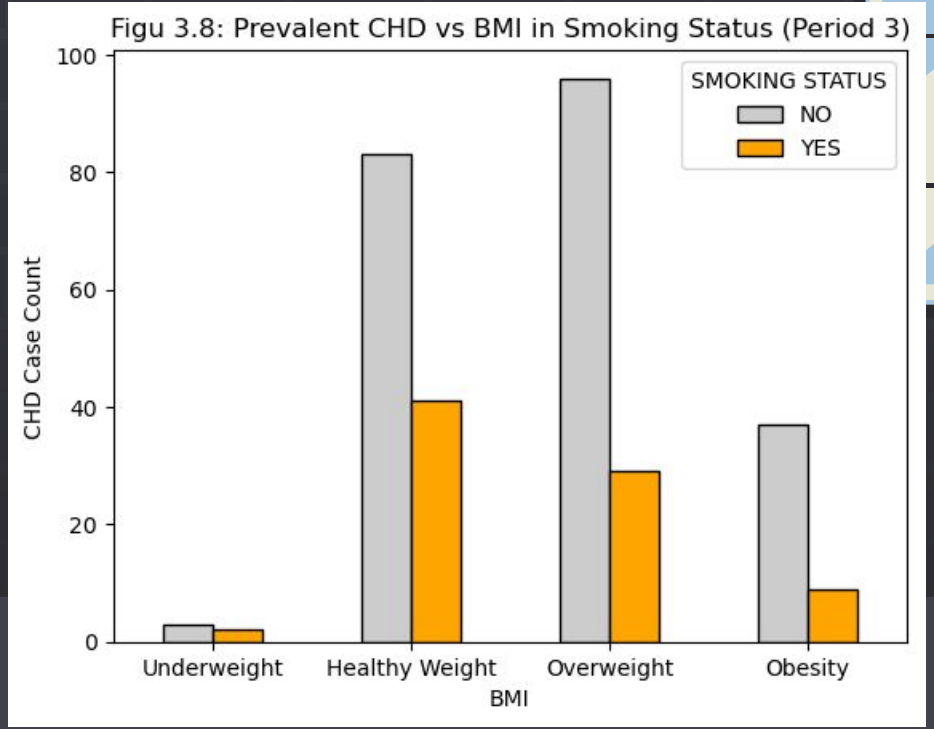


Figu 3.7: Distribution of CHD in Smoking Status (Period 3)

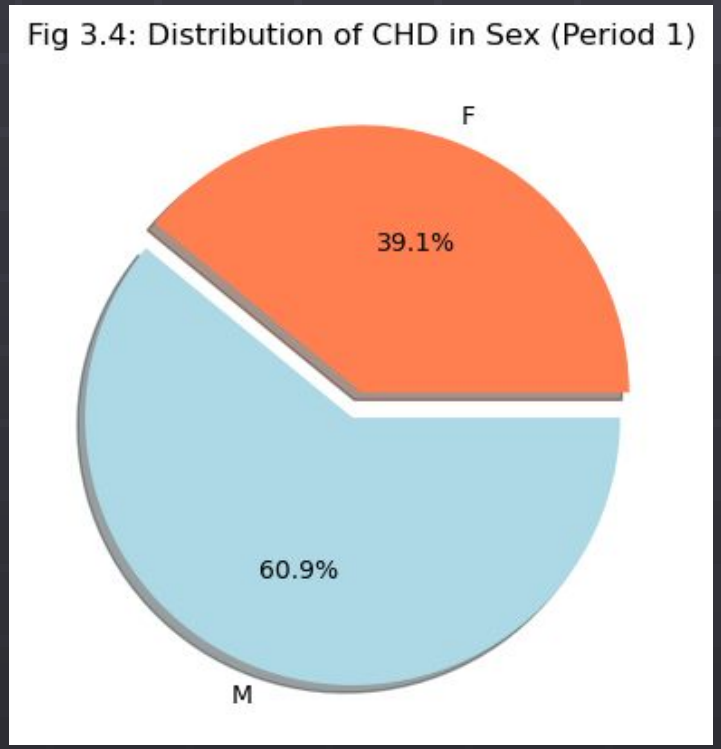


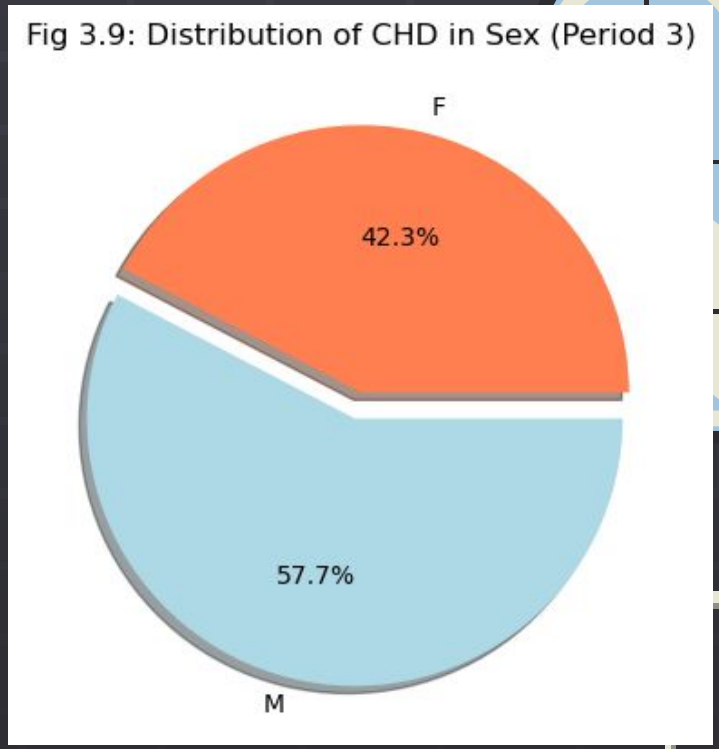
Finding: Non-smoking participants had a higher count of CHD across all BMI categories in both periods, except Healthy Weight in Period 1.





Percentage Distribution of CHD by Sex

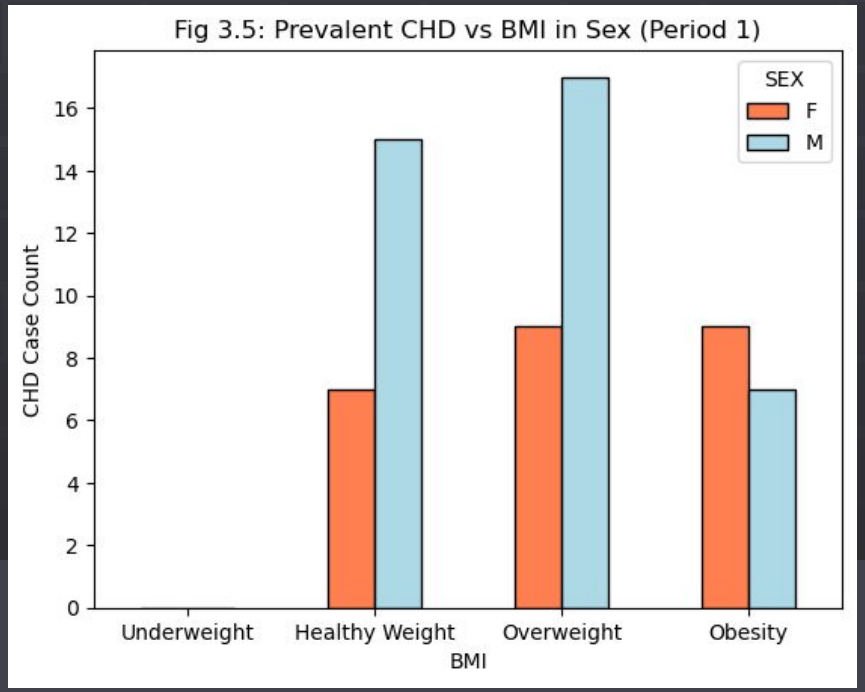


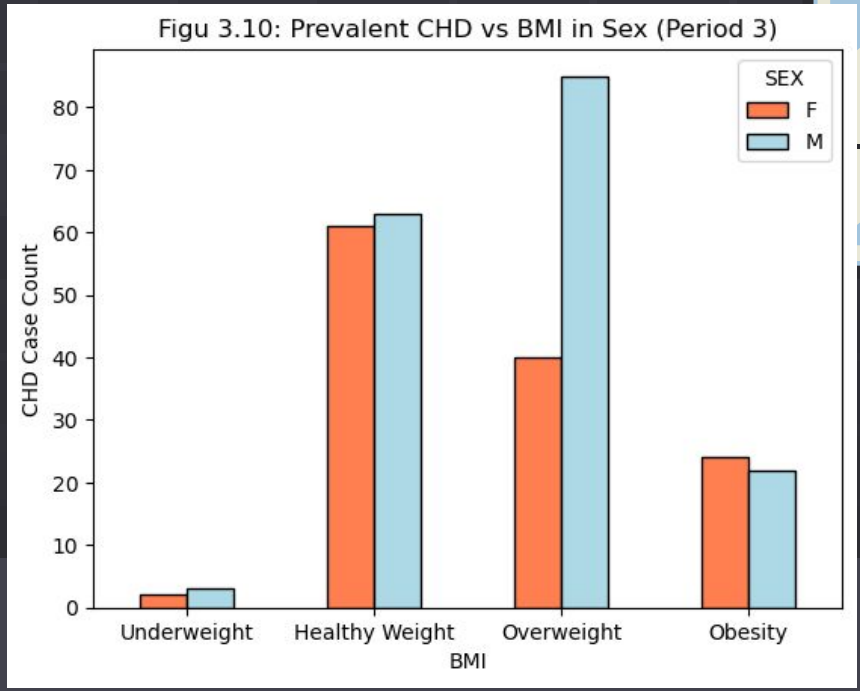


male participants showed a higher rate of CHD than female participants in both periods

In relation to BMI:

- More male participants with CHD in Overweight and Healthy weight, across both Periods
- Obesity was the only BMI category where more female participants had higher CHD count, the difference is very small however





Limitations

- Loss of data after cleaning - data was reduced from 4434 to 2754 participants
- Data is taken from 1956-1968, some findings may be outdated
- CHD may take few decades to manifest, the study spans a timeline of 12 years.
- Lack of demographic data of participants, such as race, and *may* question the generalizability to the general population

Thank you

Questions?