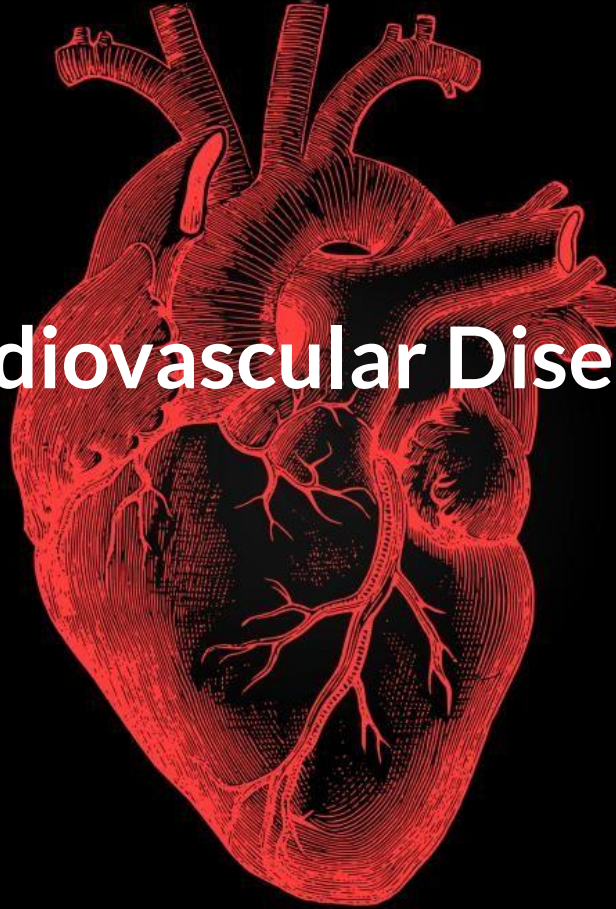# Cardiovascular Diseases

How Can We Help Prevent CVD Casualties?

1. What factors are most important when determining protective and risk factors?

2. Is there a certain population group that is most affected by CVDs?

3. What's the best way to spread knowledge of CVDs and how to reduce risk?
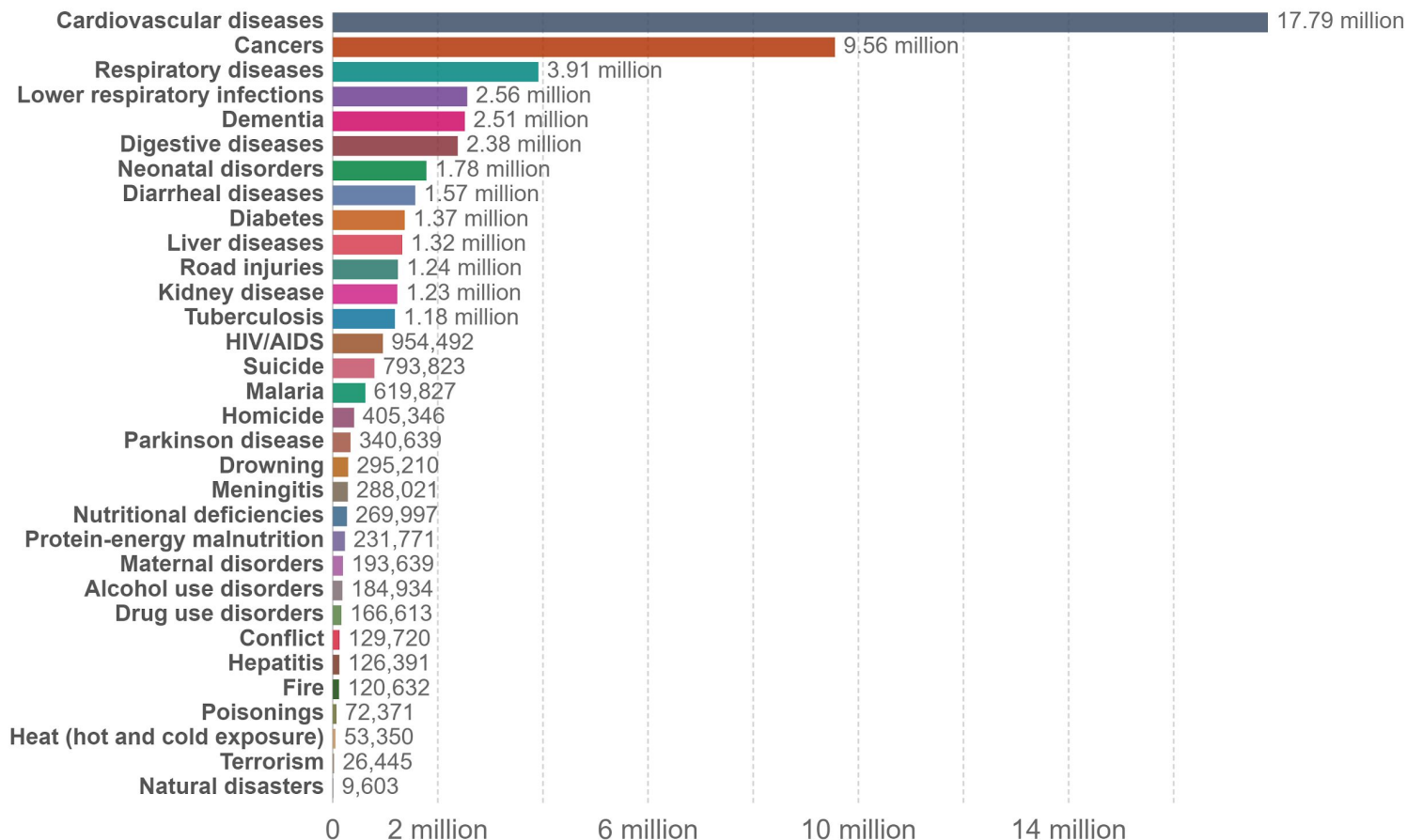
What are Cardiovascular Diseases?

According to WHO (World Health Organization), "Cardiovascular diseases are a group of disorders of the heart and blood vessels."

Some CVD Examples:

- Deep Vein Thrombosis & Pulmonary Embolism
- Coronary Heart Disease
- Cerebrovascular Disease
- Peripheral Arterial Disease

Number of deaths by cause, World, 2017

Cause	Deaths
Cardiovascular diseases	17.79 million
Cancers	9.56 million
Respiratory diseases	3.91 million
Lower respiratory infections	2.56 million
Dementia	2.51 million
Digestive diseases	2.38 million
Neonatal disorders	1.78 million
Diarrheal diseases	1.57 million
Diabetes	1.37 million
Liver diseases	1.32 million
Road injuries	1.24 million
Kidney disease	1.23 million
Tuberculosis	1.18 million
HIV/AIDS	954,492
Suicide	793,823
Malaria	619,827
Homicide	405,346
Parkinson disease	340,639
Drowning	295,210
Meningitis	288,021
Nutritional deficiencies	269,997
Protein-energy malnutrition	231,771
Maternal disorders	193,639
Alcohol use disorders	184,934
Drug use disorders	166,613
Conflict	129,720
Hepatitis	126,391
Fire	120,632
Poisonings	72,371
Heat (hot and cold exposure)	53,350
Terrorism	26,445
Natural disasters	9,603

0   2 million   6 million   10 million   14 million

# Most Important Factors Associated w/ CVDs

- Systolic Pressure
- Age
- Cholesterol Level
- BMI
- Diastolic Pressure
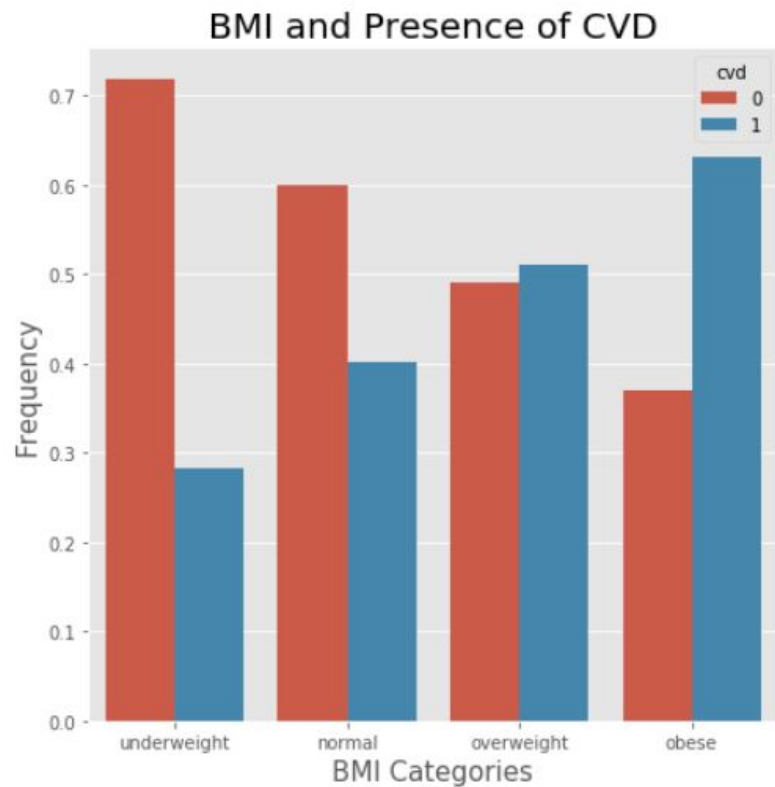- Sedentary Lifestyle (Not Active)
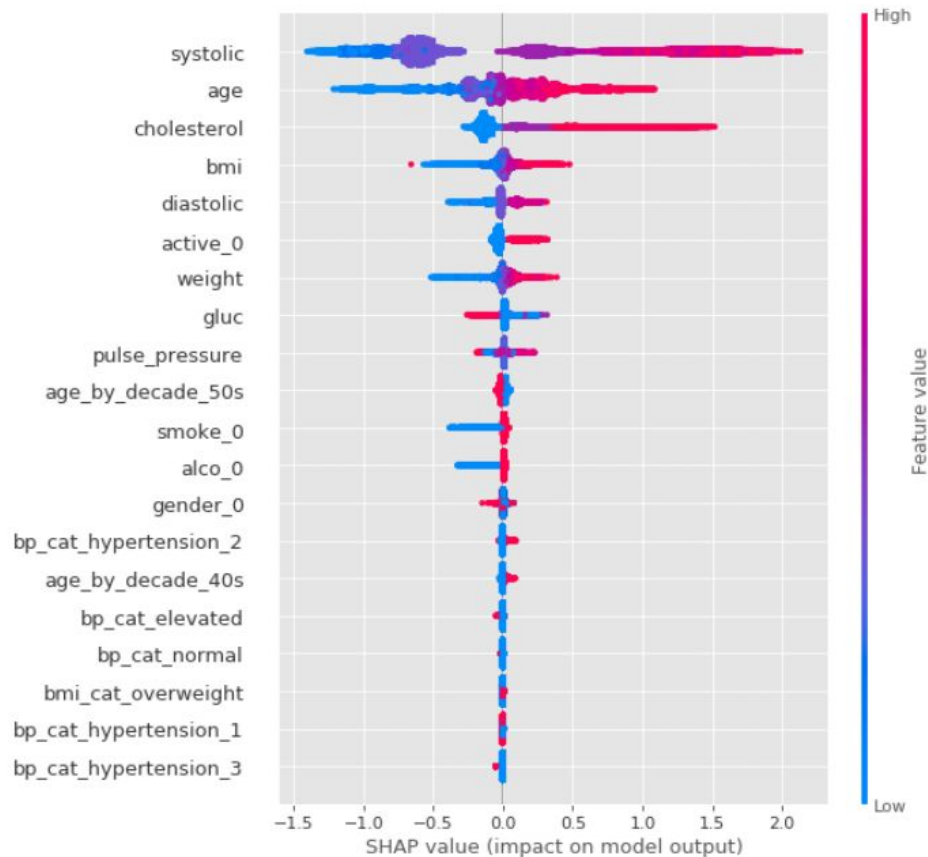
Blood Pressure

Systolic / Diastolic Pressure

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Percentage of BP Categories Associated w/ CVD

BMI
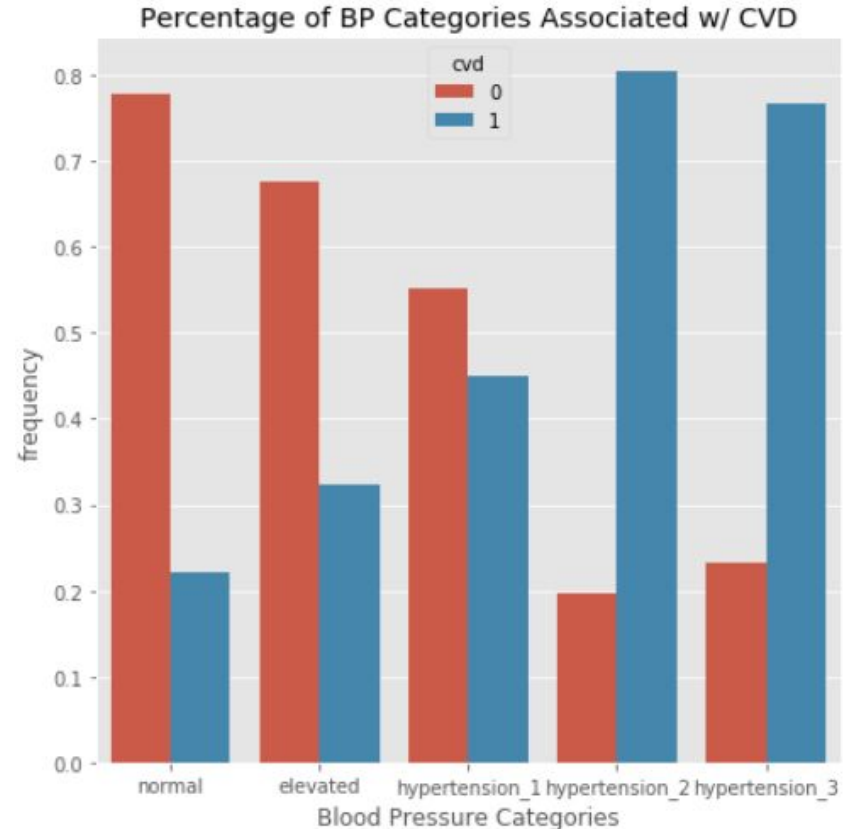
BMI and Presence of CVD

BMI Classification

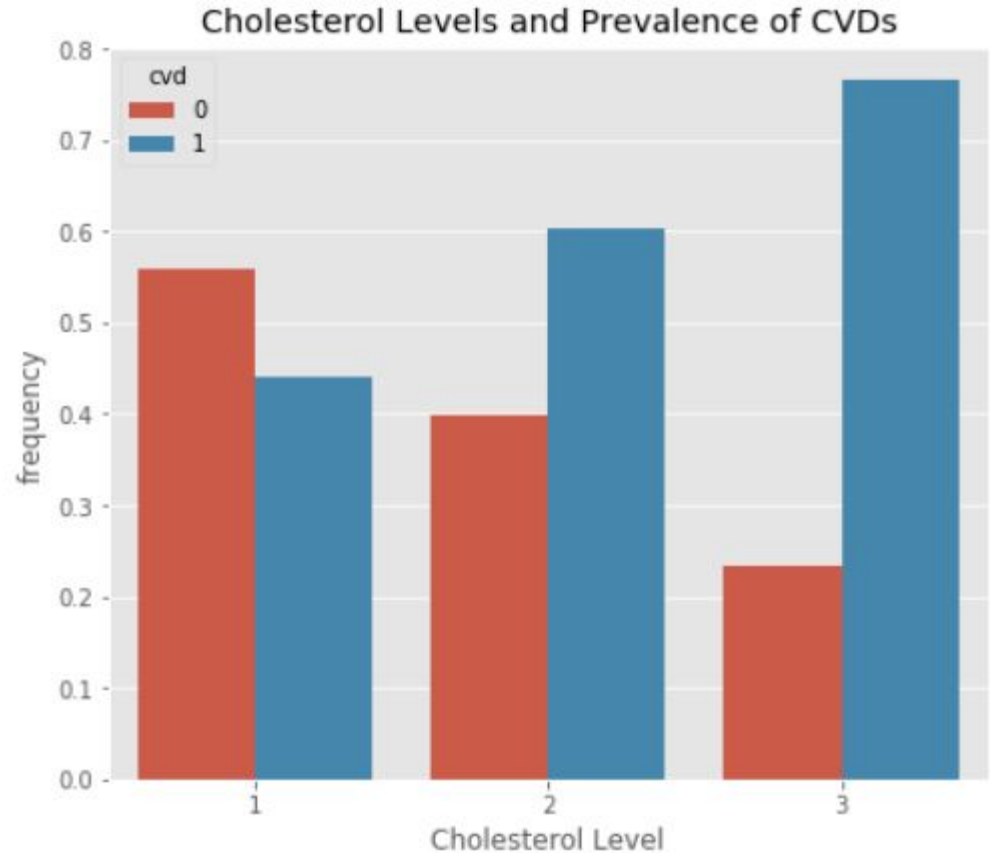| BMI	Category
Lower than 18.5	Underweight
18.5 up to 25	Optimal
25 up to 30	Overweight
30 upwards	Obese

Age

Age and Presence of CVD
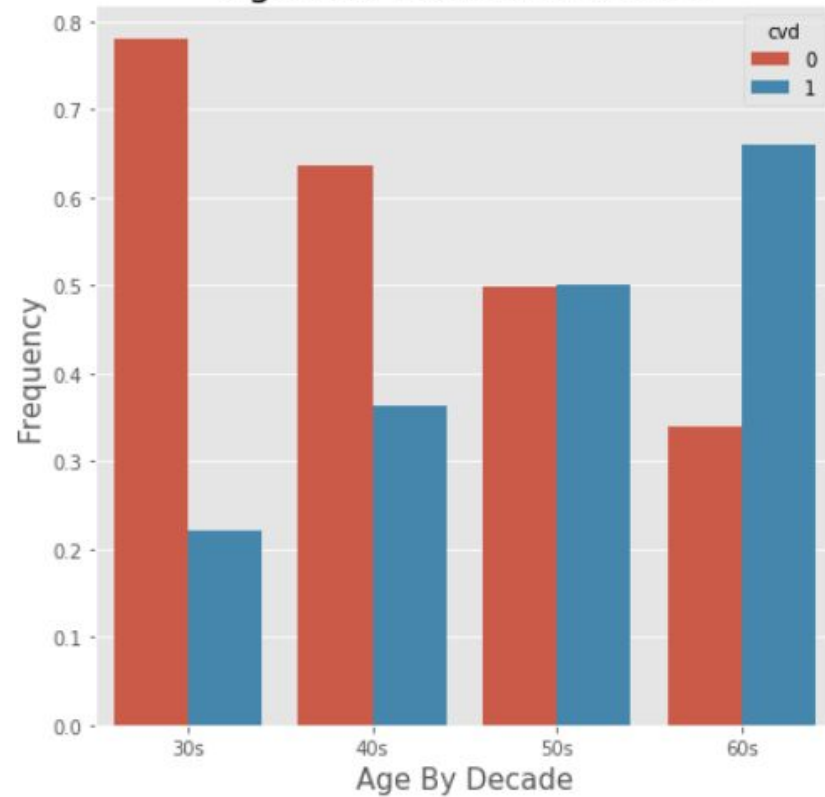
Cholesterol

What causes high cholesterol?

- Unhealthy eating habits
- Sedentary lifestyle
- Smoking (lowers our HDL)

Cholesterol Levels and Prevalence of CVDs

Further Research

- Details on smoking, physical activity, and drinking (more than just boolean values). E.g. On average, how many times a week do you work out?
- Include average eating habits
- Type of work lifestyle (if any)
- Average Stress Level (1-10 scale)
- On Average, number of hours sleep a night
- Any pre-existing family history of CVDs
- Multiclass (What type of CVD)
- Relative Fat Mass Index

References

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2. "All About Adult BMI" Centers for Disease Control and Prevention. https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html. Accessed October 4th, 2020.
3. Yildiran, Tansel et al. *"Low pulse pressure as a predictor of death in patients with mild to advanced heart failure."* Texas Heart Institute journal vol. 37,3 (2010): 284-90.
4. "Understanding Blood Pressure Readings." American Heart Association, www.heart.org/en/health-topics/high-blood-pressure/understanding-blood-pressure-readings. Accessed October 4th, 2020.
5. Narloch, J A, and M E Brandstater. *"Influence of breathing technique on arterial blood pressure during heavy weight lifting."* Archives of physical medicine and rehabilitation vol. 76,5 (1995): 457-62.
6. Dr G. M. C. Rosano, C. Vitale, G. Marazzi & M. Volterrani (2007) *Menopause and cardiovascular disease: the evidence*, Climacteric, 10:sup1, 19-24, DOI: 10.1080/13697130601114917
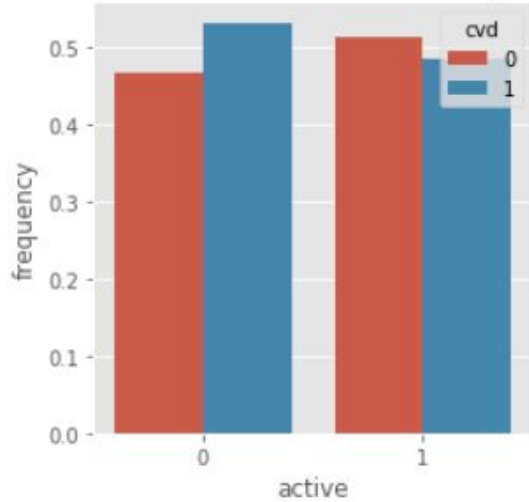
Appendix

Glucose Levels

Glucose Levels and Presence of CVD
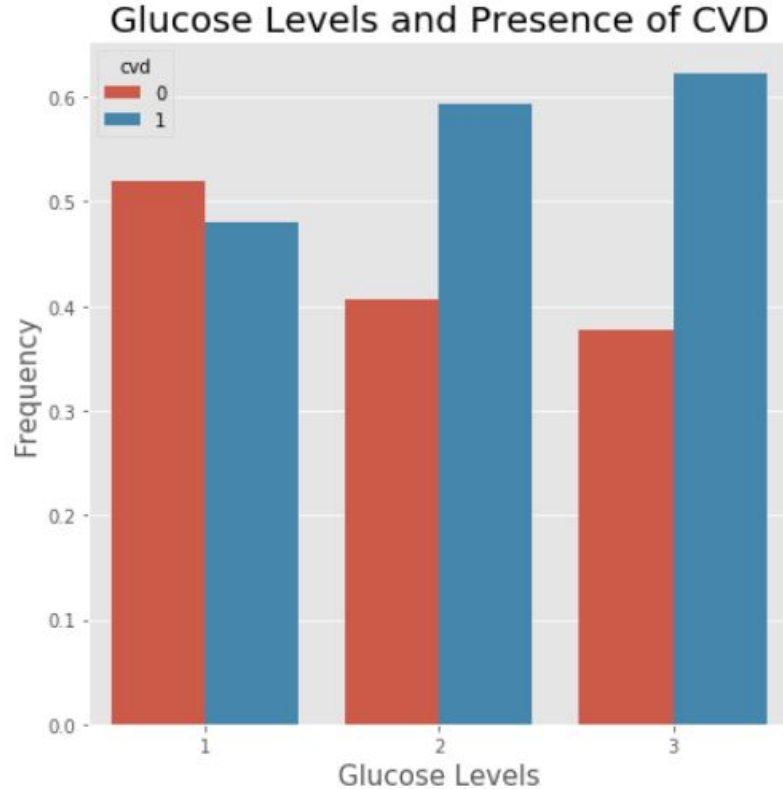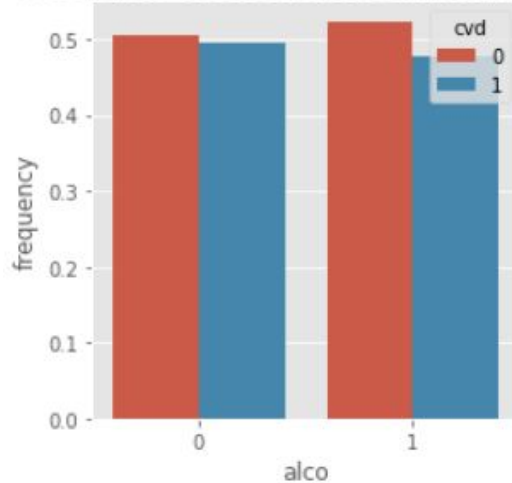
Blood Pressure Scatterplot
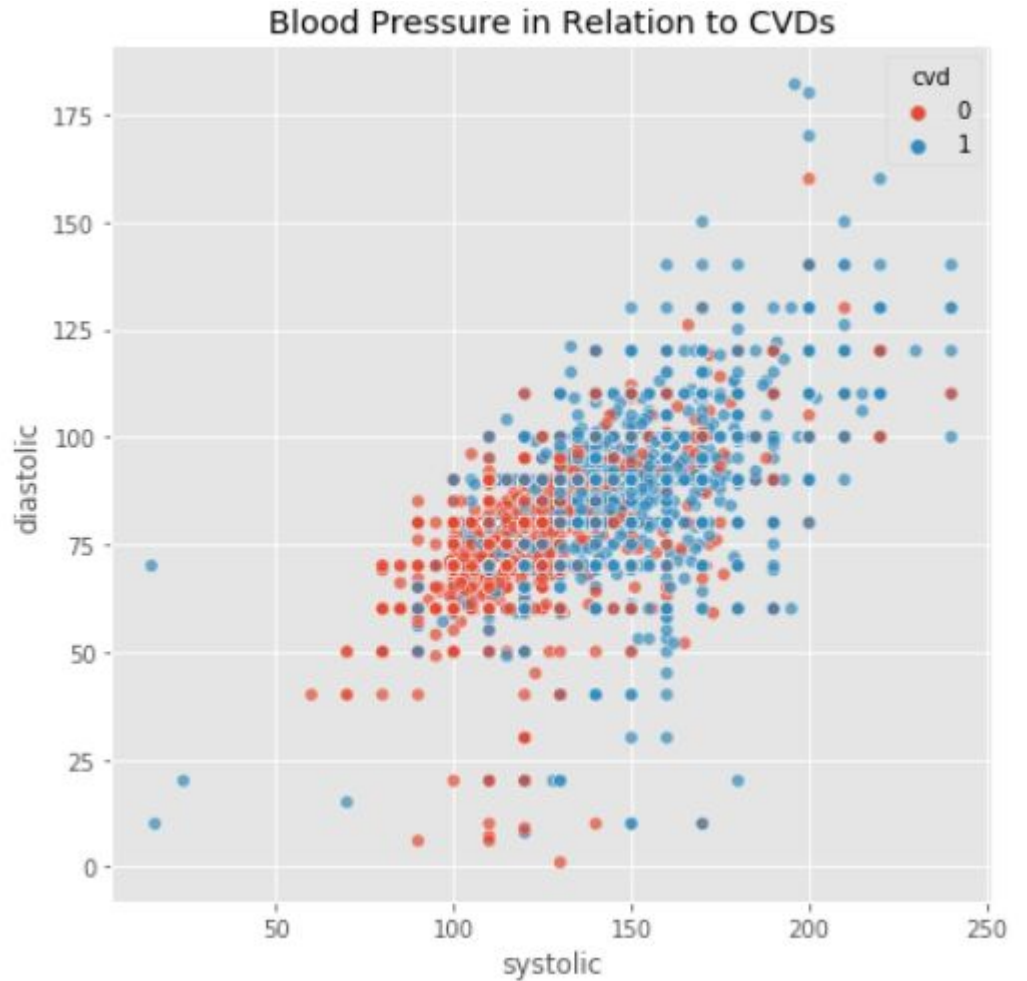
Smoking, Alcohol, and Activity Compared to CVD