

# A COMPREHENSIVE ANALYSIS OF DIABETES HEALTH INDICATORS

IE 6600 Sec-1 Group 26

HACKATHON  
PRESENTATION



# INTRODUCTION

- Diabetes is a serious chronic disease in which individuals lose the ability to effectively regulate levels of glucose in the blood.
- Insulin helps to break down glucose in the bloodstream to create energy.
- The Diabetes Health Indicators Dataset is a collection of information that provides insight into the health status of individuals with diabetes.



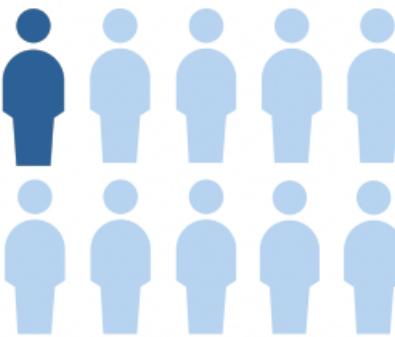
# DIABETES IN THE U.S.

## A SNAPSHOT



37 million people  
have diabetes

### DIABETES



That's about **1 in every  
10** people

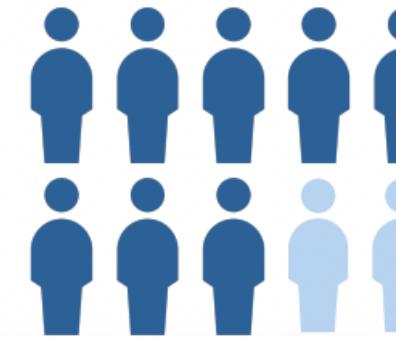


**1 in 5** people don't  
know they have it



96 million American  
adults—**more than 1 in 3**  
—have prediabetes

### PREDIABETES



**More than 8 in 10**  
adults with prediabetes  
don't know they have it

## COST



**\$327 Billion**

Total medical costs & lost work & wages for people with diagnosed diabetes



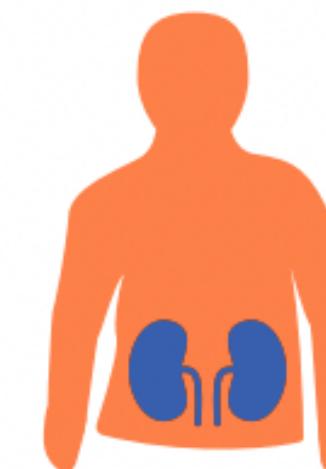
Medical costs for people with diabetes are **more than twice as high** as for people without diabetes

## RISKS

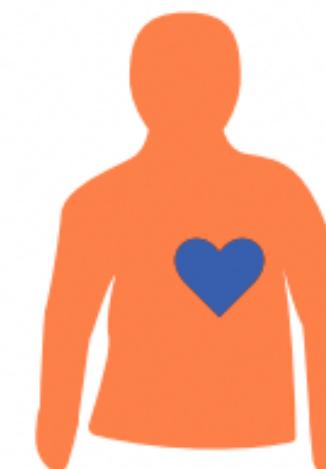
People who have diabetes are at **higher risk of serious health complications:**



Blindness



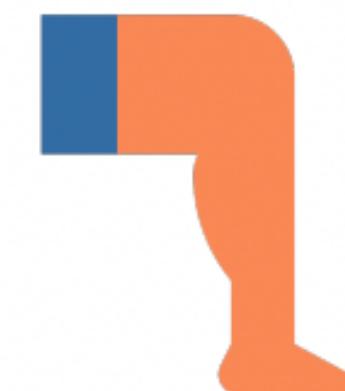
Kidney failure



Heart disease



Stroke



Loss of toes, feet, or legs

## PROBLEM STATEMENT

- To understand the relationship between different health factors and diabetes management.
- To identify key health factors that have the greatest impact on diabetic health outcomes.

## OBJECTIVE

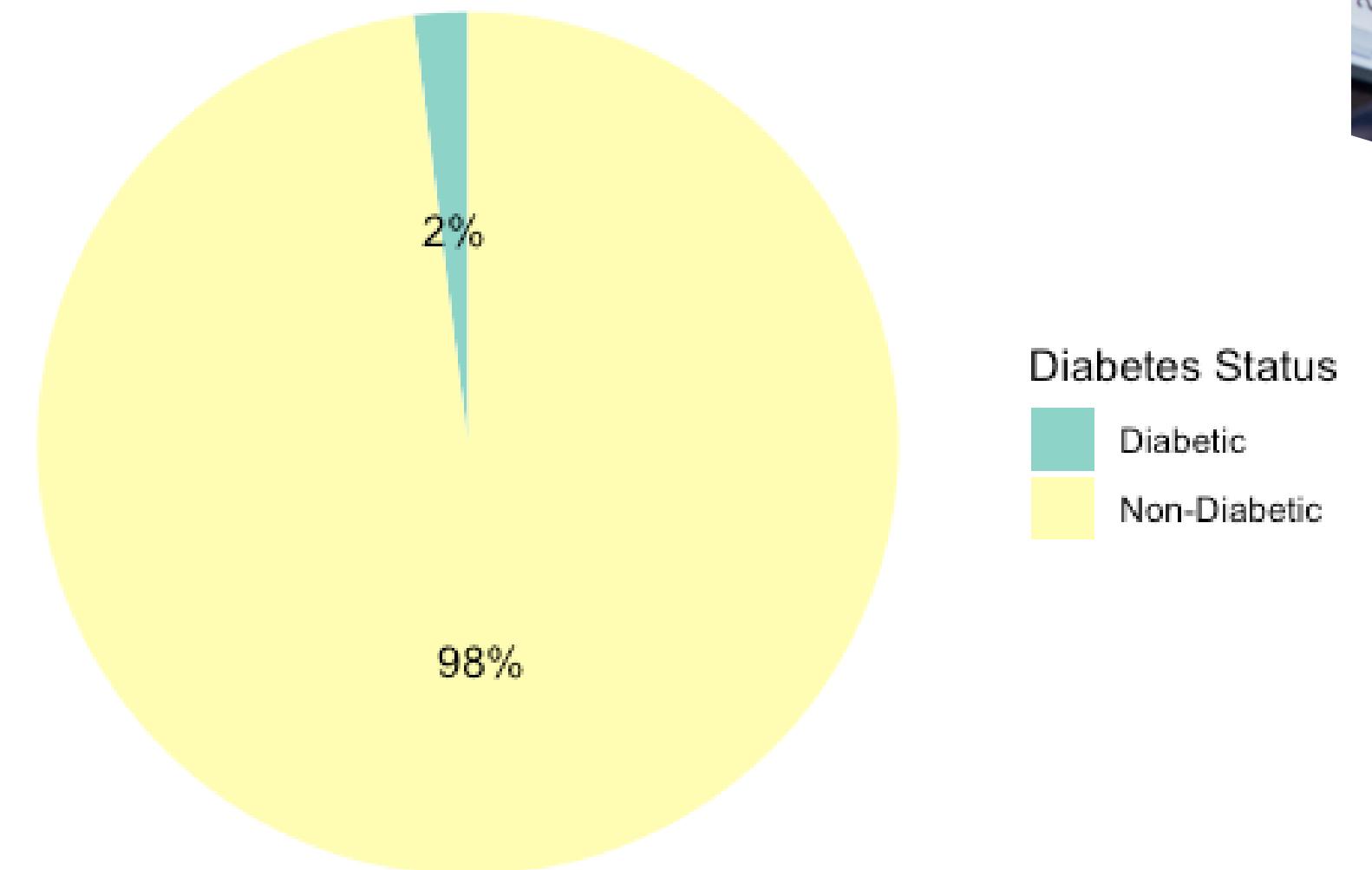
- To investigate the relationship between various demographic and lifestyle factors, such as age, sex, education level, income, body mass index (BMI), and obesity, and their impact on the health of individuals with diabetes.



# SECTION 1: EFFECT OF DEMOGRAPHIC INDICATORS ON DIABETES

What percent of people are diabetic in the population survey of 253680 individuals?

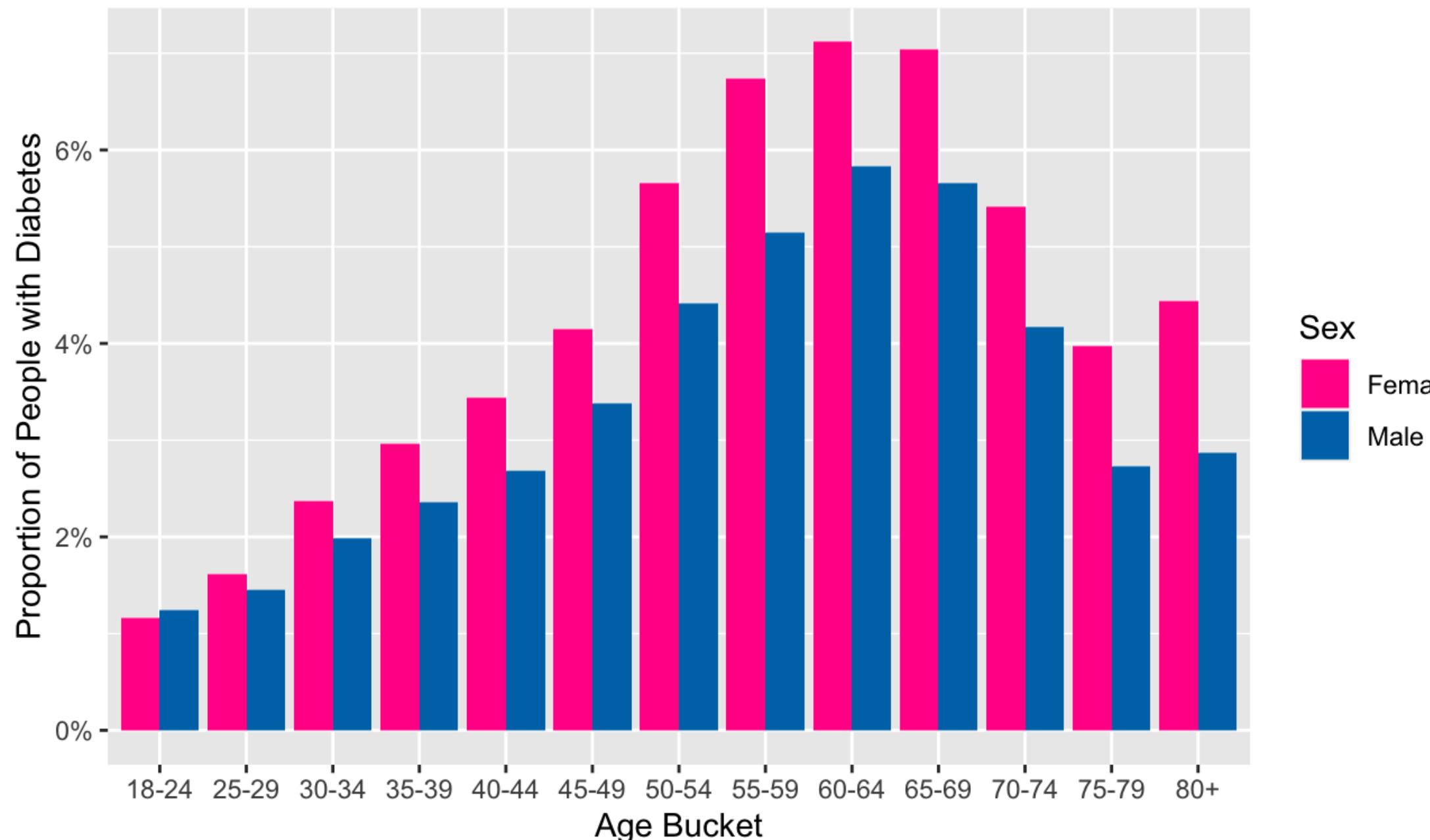
Plot 1: Distribution of Diabetes Status



# DISTRIBUTION OF DIABETIC INDIVIDUALS BY SEX AND AGE GROUP



Age Bucket vs Sex



## INSIGHT 1

Females have a higher risk of developing diabetes compared to male

Sex  
Female  
Male

## SKEWNESS

left skewed Graph

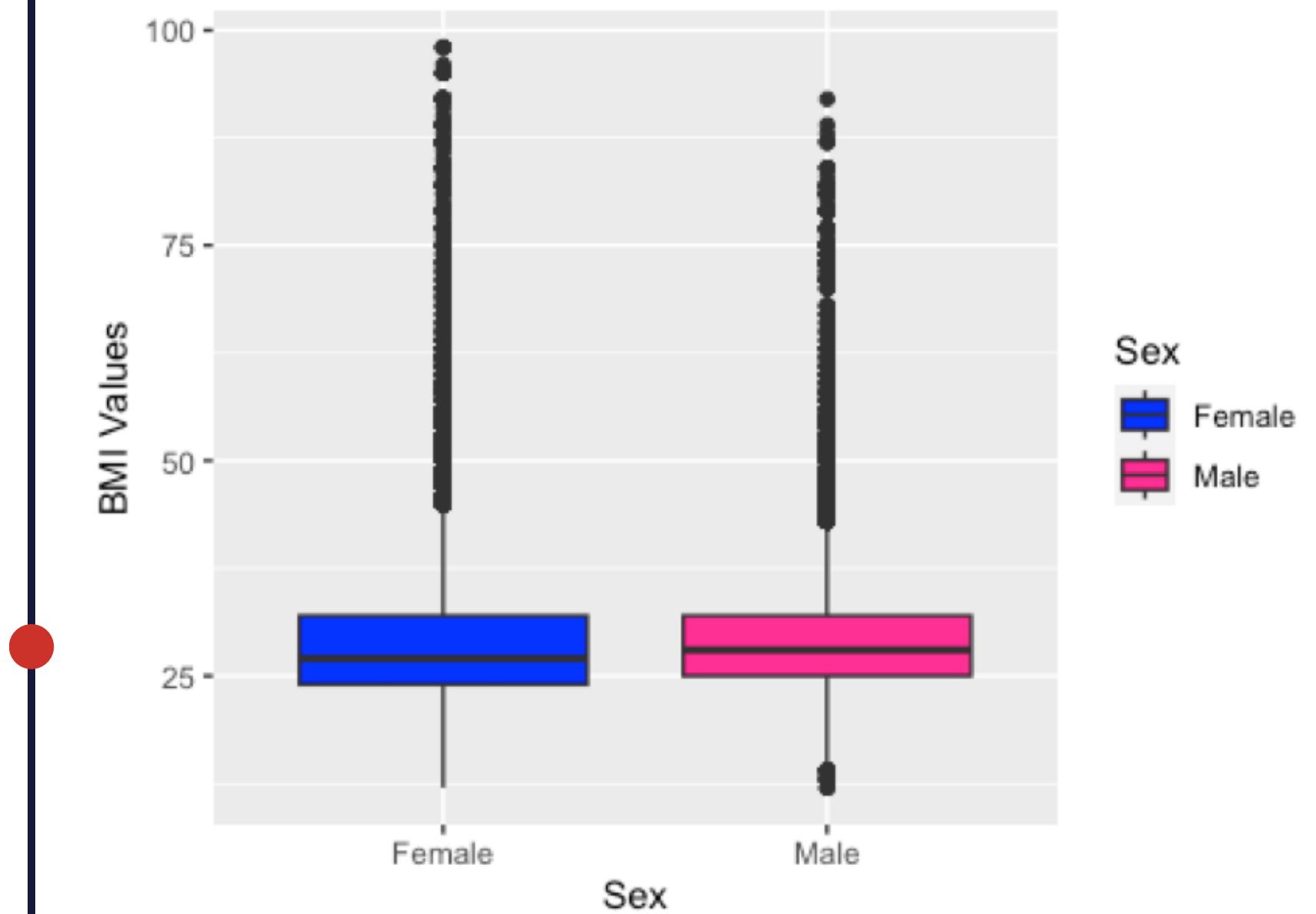
## INSIGHT 2

There is an increase in number of cases of diabetes between age 45 to 70

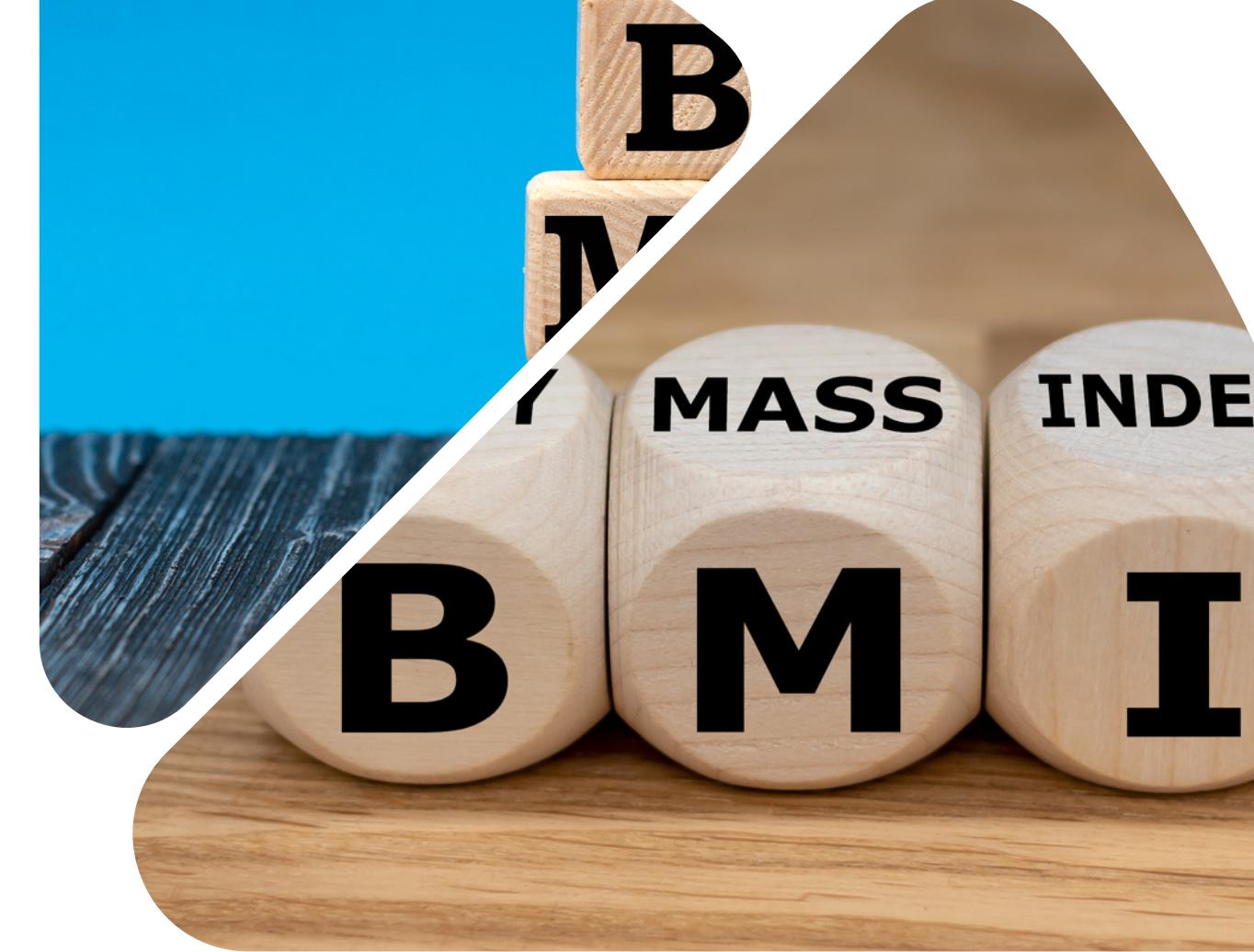
# SECTION 2: LIFESTYLE FACTORS

## RELATIONSHIP BETWEEN BMI AND DIABETES

Plot 1: Box Plot for Gender based BMI Values



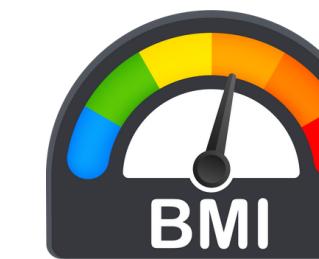
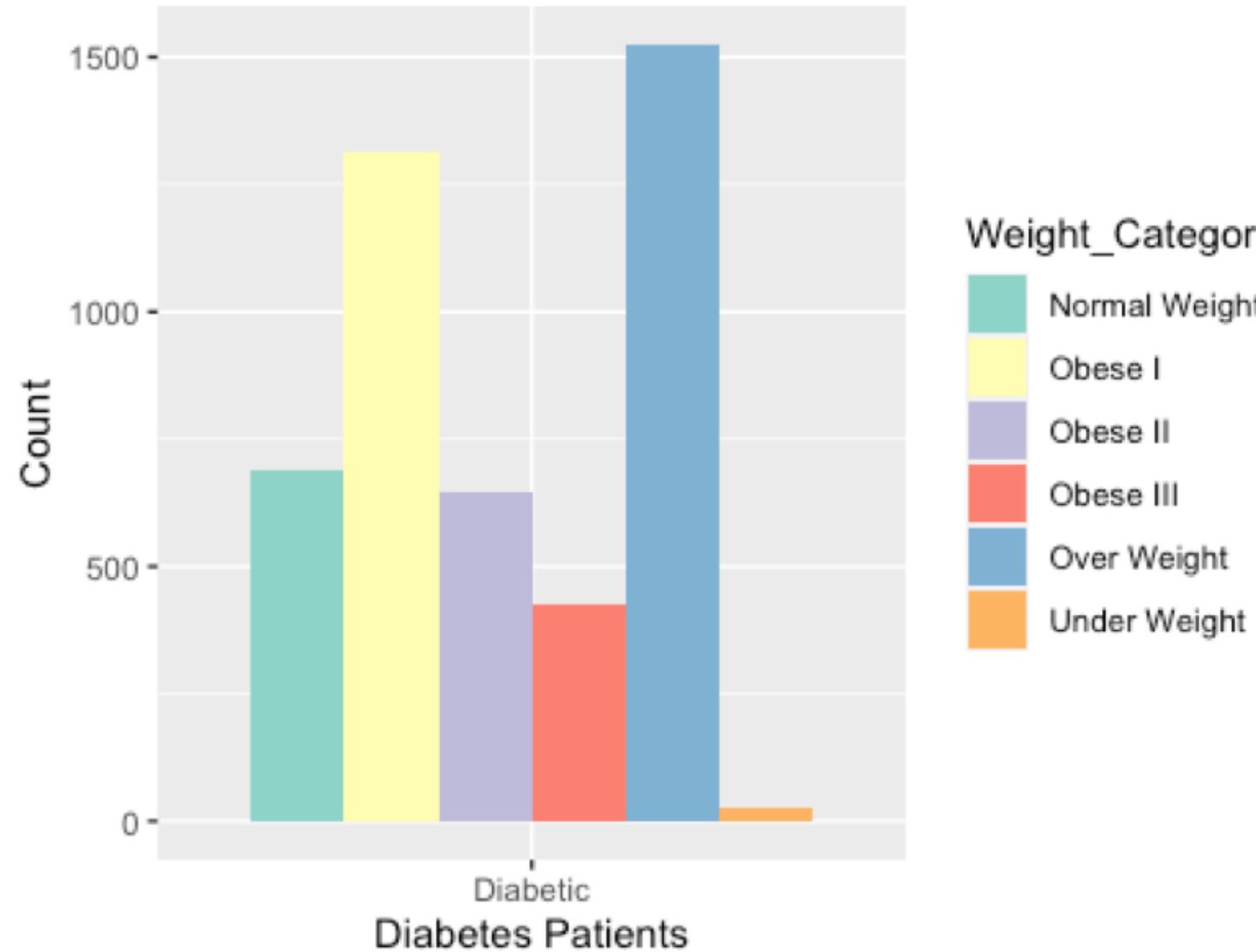
50% of the BMI distribution is within the range of 24 to 31, which is considered overweight. Lastly, 25% of the surveyed population is classified as obese, with a BMI above 31.



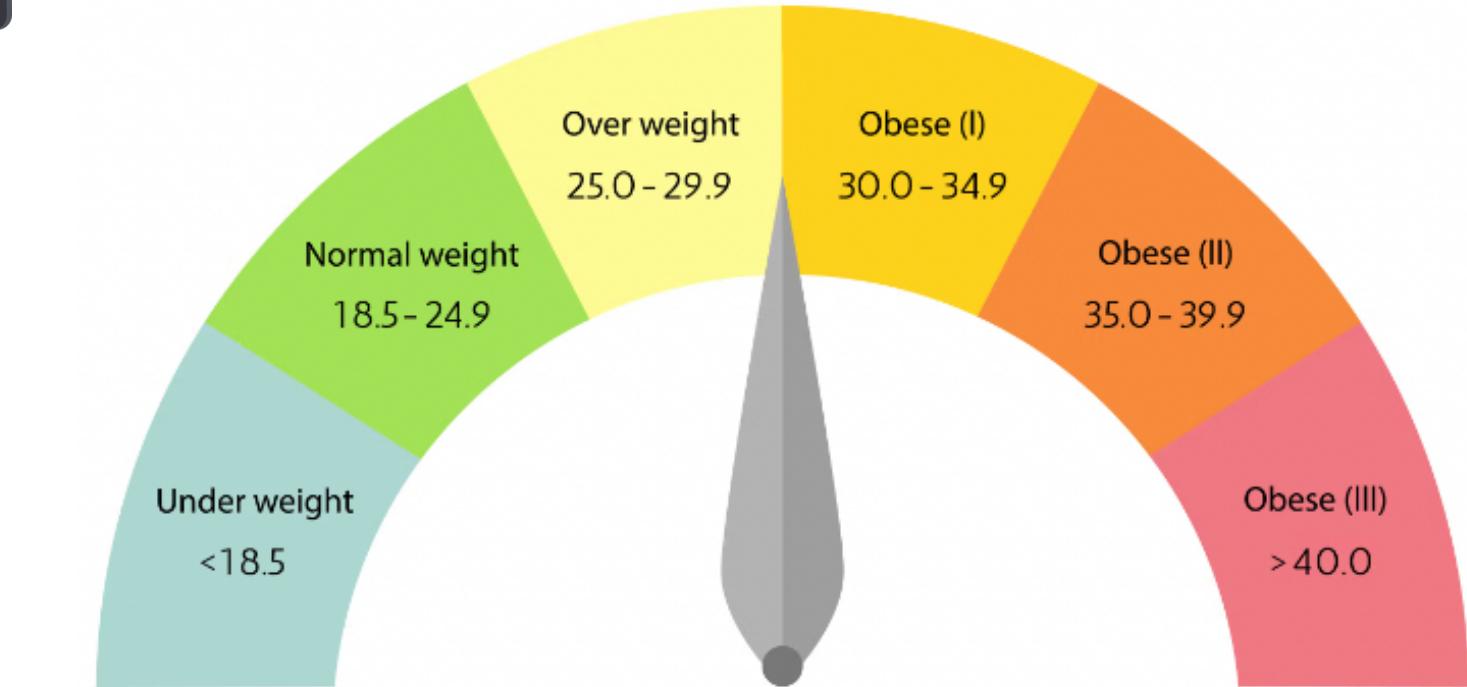
This highlights the need for continued efforts to address the issue of obesity and promote healthy weight habits in the population.

# DISTRIBUTION BETWEEN OBESITY OF THE SURVEYED POPULATION AND DIABETIC PATIENTS

Plot 2: Diabetes Status by BMI



# BODY MASS INDEX (BMI)



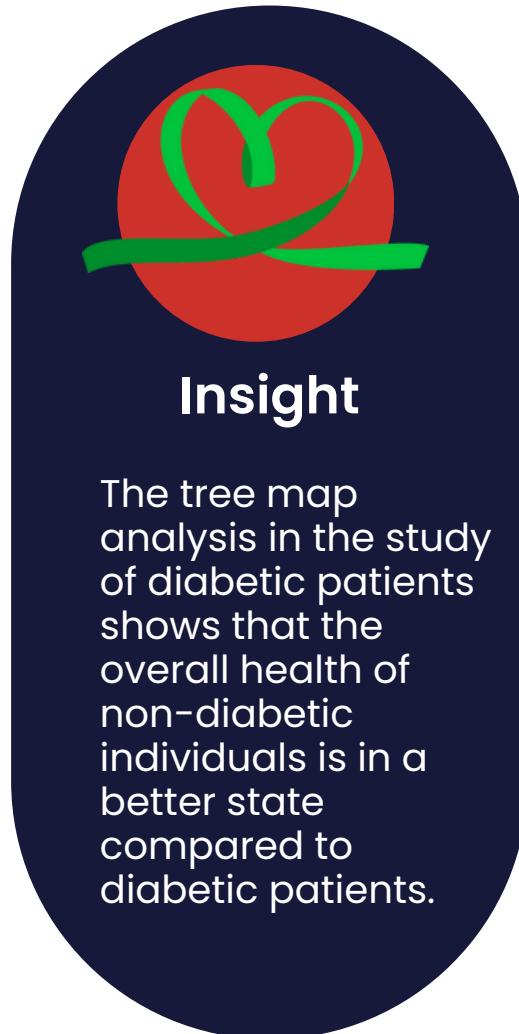
## Increase Physical Activity

To Maintain Body Mass Index Level, a healthy weight.  
Increase the physical activity of the body

## Obesity

62% of diabetic people are obese and overweight. Obesity is a significant risk factor for developing diabetes.

# SECTION 3: PHYSICAL AND MENTAL HEALTH INDICATORS



Plot 1: General health of Diabetic Patients

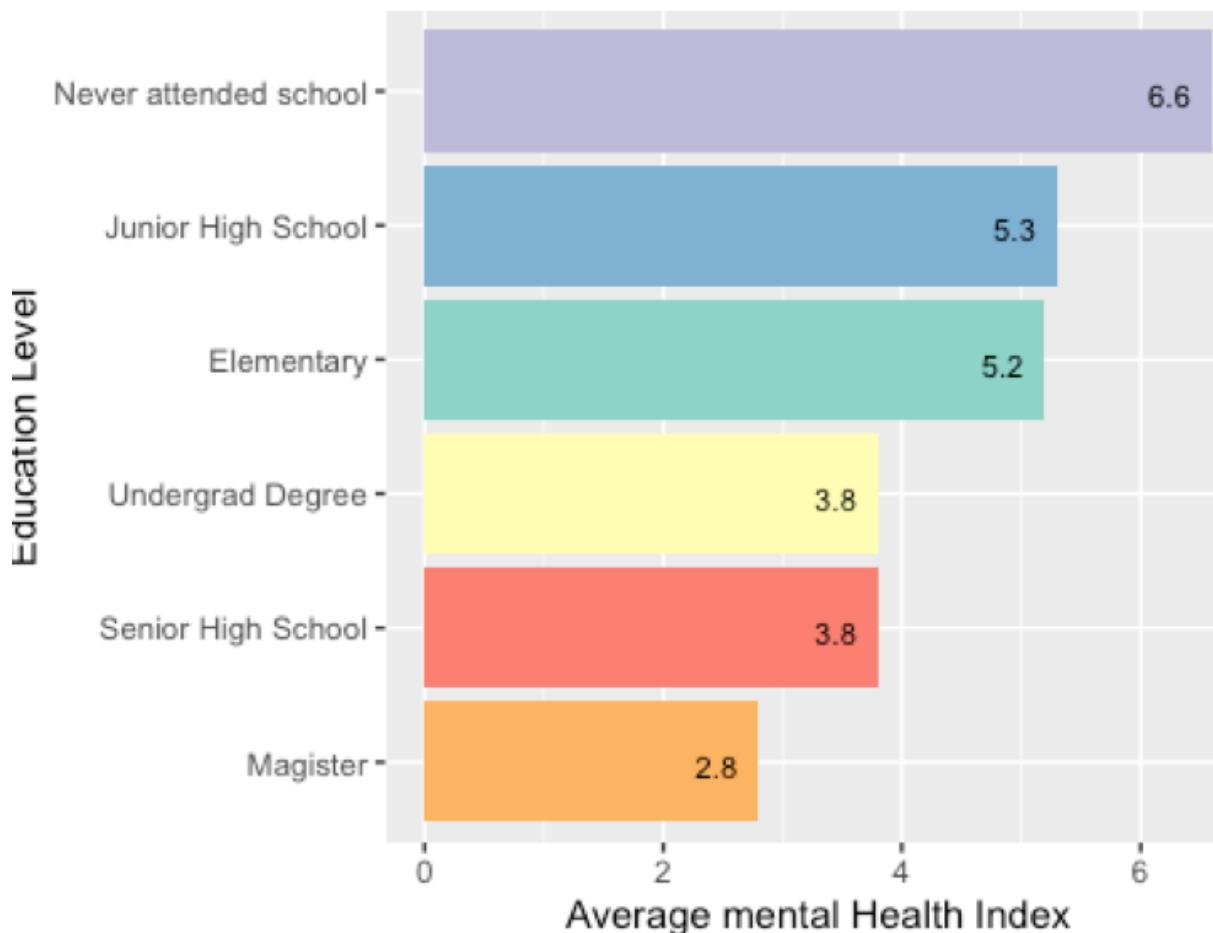


Plot 2: General health of Non Diabetic Patients

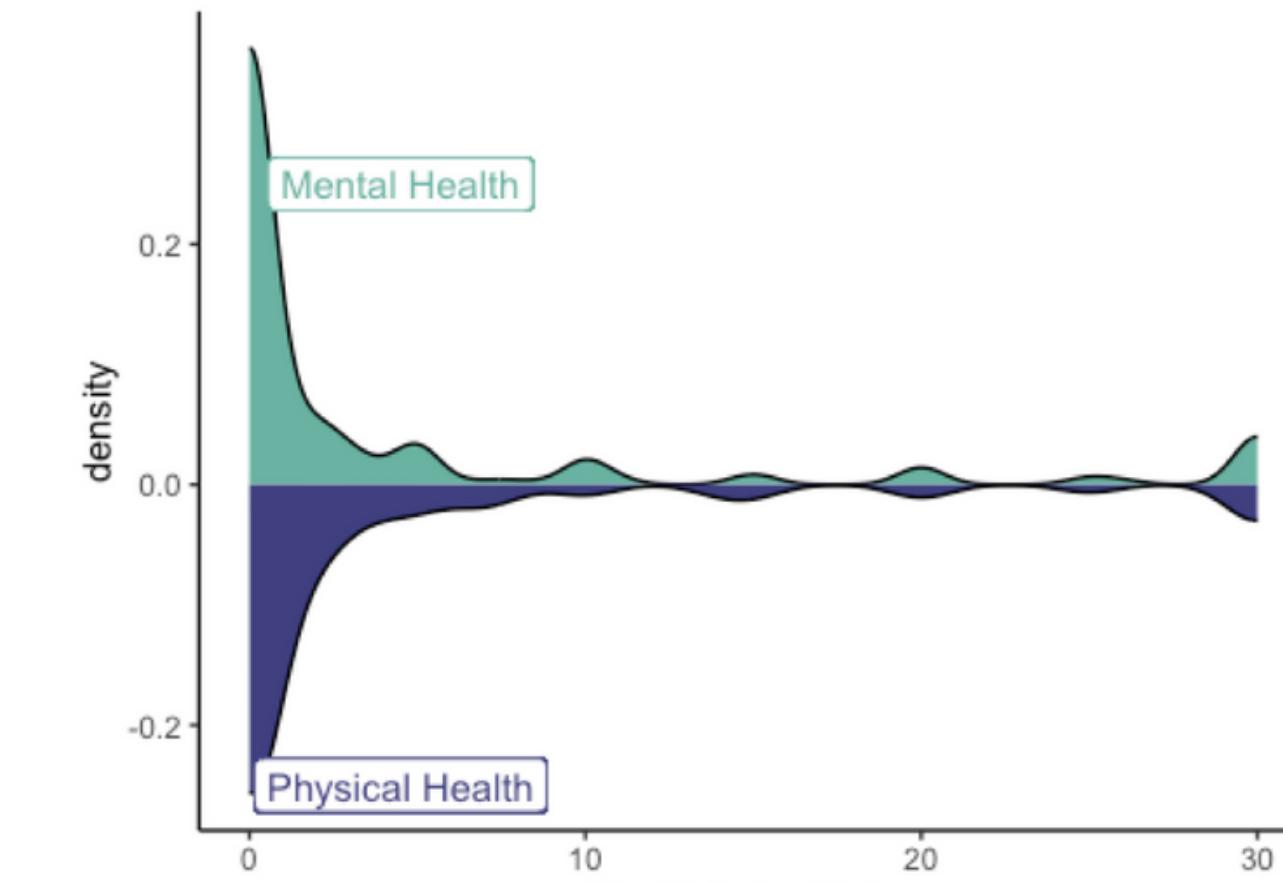


# EDUCATION LEVEL AND MENTAL AND PHYSICAL HEALTH

Plot 2: Relation of Education Level with Mental H



Plot 3: Density Plot Mental vs Physical Health

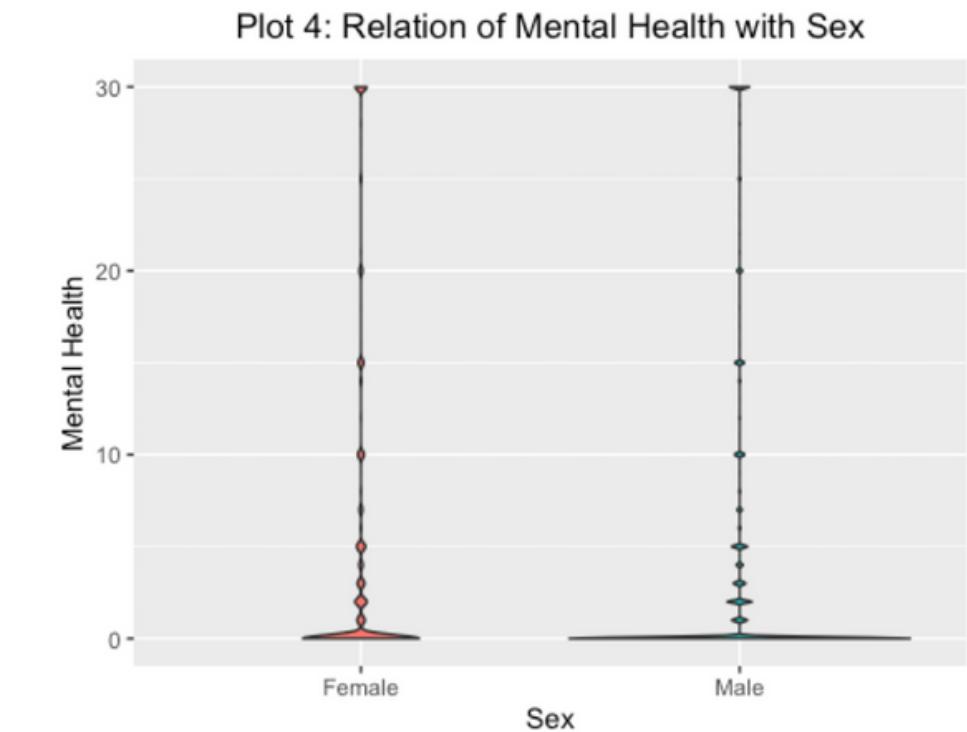
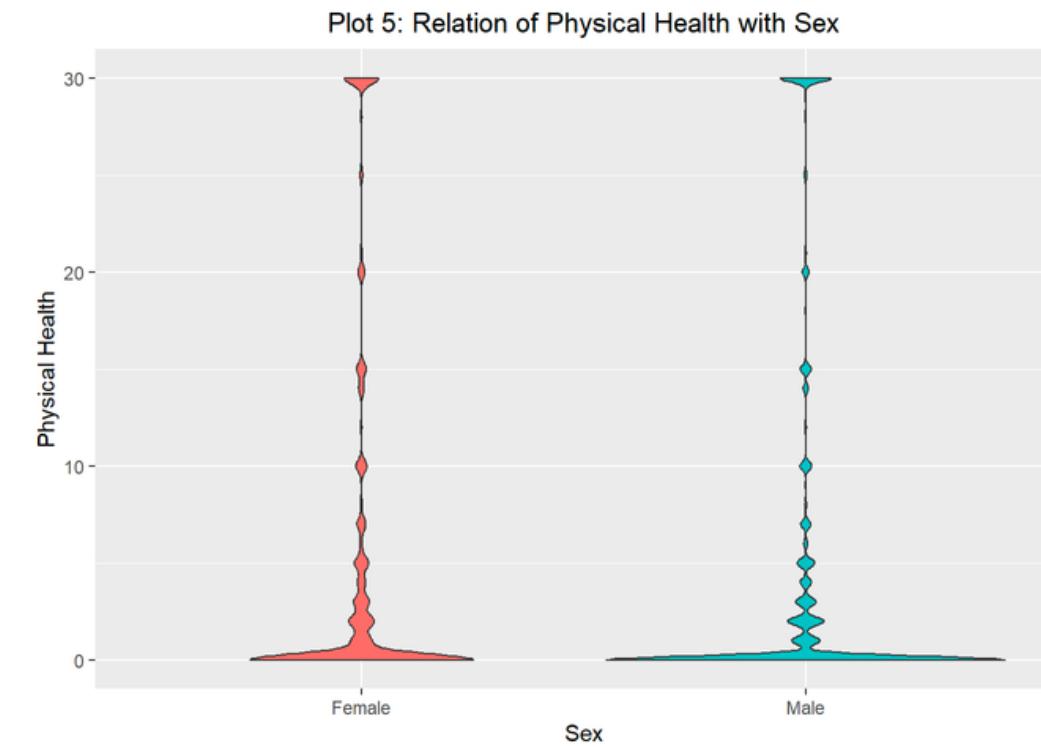


Plot suggests a potential link between illiteracy and poor mental health. People who never attended school has highest average mental health index of 6.6

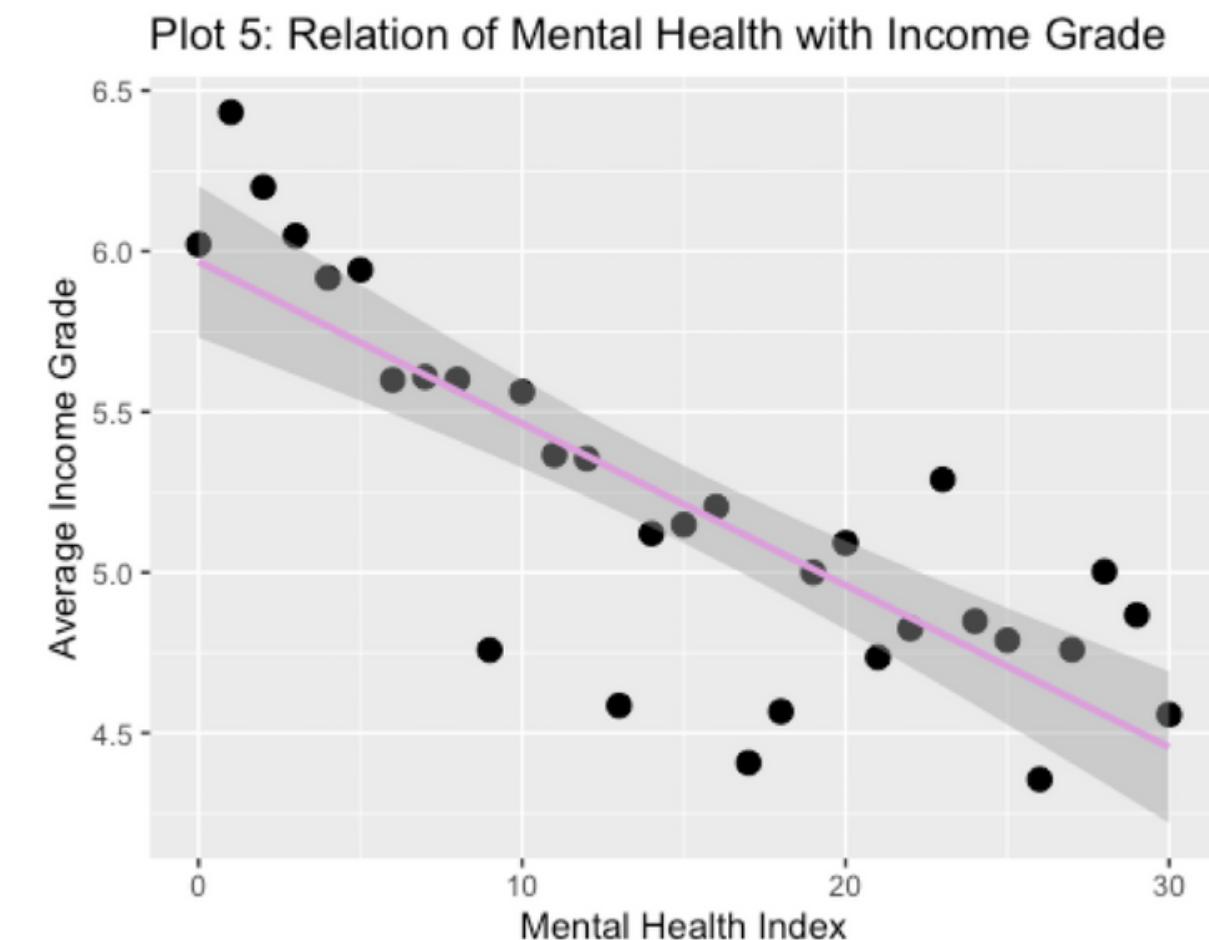
The density plot displays a balanced representation of mental and physical health distribution, indicating their simultaneous change. It emphasizes the significance of considering both aspects in our daily lives, as they interrelate.

# PHYSICAL AND MENTAL HEALTH ACROSS THE GENDERS

Contrast to females, who consistently experience bumps in the violin plot, males have better mental health. One of the causes of diabetes in females may be poor mental health



The increased levels of stress and trauma that come with living in poverty and facing financial insecurity justify the inverse relationship of income grade and mental health .



# DIABETES PREVENTION



Health  
Diet



Healthy  
Weight



Physical  
Activity



Regular doctor  
checkups



Start by **CHANGING** your lifestyle

# CONCLUSION

- Demographic factors such as age, sex, education level, income, body mass index (BMI) have been shown to have a significant impact on the risk and outcomes of diabetes.
- Age: The risk of developing type 2 diabetes increases as people get older.
- Other medical conditions: Some medical conditions, such as high blood pressure, high cholesterol can increase the risk of developing diabetes.
- Lifestyle factors: Eating a diet high in sugar and refined carbohydrates, being physically inactive, and being overweight or obese can increase the risk of developing diabetes.

# THANK YOU

