# BMI Analysis & Charting

### October 2022

## The Program

### Requirements

Define the data.

Weight, height, gender?

Make the CSV file. [1]

### The main program

Join all of the steps together and move logically from one to the next. [2]

### The steps

Get a dataset (read from a CSV file).

Make the function – file name, weight column, height column. [3]

Analyse dataset.

Mean, SD, min, max, QQ. [4]  
 Compare by gender?

Calculate BMI.

Checks? and corrections? [5]

Categorise the BMI [5a]

Plot BMI.

Select plots?   
 Compare by gender?

Overall plotter which selects the plot type [6]

Each plot type [6a-…]

Analyse BMI.

Mean, SD, min, max, QQ. [7]  
 Compare by gender?

## The Components

1. Make a test dataset [Group 1]

Inputs: none  
Outputs: none

Tasks: Make a test dataset (or more than one) containing data (which may be correct or deliberately faulty to see if the program survives poor data. What kind of problems do you think you will get in the data.

Whose input do you need? No-one  
Who needs to know this? Everyone

2. The program

Inputs: none  
Outputs: none

Tasks: Use all the other functions to get the user’s choice of data, load the data,, provide descriptive analysis of the data, calculate the BMI, plot the BMI and produce analysis of BMI.

Whose input do you need? Everyone  
Who needs to know this? No-one

3. Get the dataset [Group 5]

Inputs: none  
Outputs: the data frame with the data or a message indicating the problem

Tasks: Get the user to specify the dataset (filename or dataset name).  
 Get that data and return it.

Whose input do you need? [1] Make a dataset  
Who needs to know this? [2] The program

4. Analyse the dataset [Group 2]

Inputs: dataset  
Outputs: table with analysis results (a Table 1)

Tasks: What goes in here? Number of rows of data. Weight - average. Number male, percentage. Number female, percentage. Average weight – male, female.

Whose input do you need? [3] Get a dataset / [1] Make a dataset  
Who needs to know this? [2] The program

5. Calculate the BMI [Group 7]

Inputs: dataset  
Outputs: dataset with BMI

Tasks: Calculate the BMI. Check. Test the function.

Whose input do you need? [3] Get a dataset / [1] Make a dataset  
Who needs to know this? [2] The program / [5a] Categorise the BMI / [6] Plot BMI / [7] Analyse BMI

5a. Categorise the BMI

Inputs: dataset with BMI  
Outputs: dataset with BMI categories

Tasks: Calculate the BMI category. Check. Test the function.

Whose input do you need? [3] Get a dataset / [1] Make a dataset / [5] Calculate BMI  
Who needs to know this? [2] The program / [6] Plot BMI / [7] Analyse BMI

6. Plot BMI [Group 6]

Inputs: dataset  
Outputs: plots of BMI

Tasks: Do we just plot one plot initially, then we’ll try to specify a general plotting function which asks the user to select one plot type and plots that – will need a plotter function for each type.

Whose input do you need? [3] Get a dataset / [1] Make a dataset / [5] Calculate BMI  
Who needs to know this? [2] The program

7. Analyse the dataset [Group 3]

Inputs: dataset  
Outputs: table with BMI analysis results

Tasks: What goes in here? Number of rows of data. BMI - average. Average BMI – male, female. Numbers and proportions with each category.

Whose input do you need? [3] Get a dataset / [1] Make a dataset / [5] Calculate BMI  
Who needs to know this? [2] The program