

SECI2143 Probability and Statistical Data Analysis (PSDA) – PROJECT 1

HEALTH AWARENESS OF MALAYSIANS

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INTRODUCTION

In this day and age, health problems have become a major issue worldwide. Based on a study done in 2015 which was published by New England Journal of Medicine, around 10% of people in the world are obese (Sifferlin, 2017). 10% might seem like a small number but we have to realise that there are roughly 7.5 billion people in the world, 10% from that magnitude of population means that there are around 750 million people who are obese globally, this is a huge amount of people who are unhealthy, which just goes to show how many people in the world are unaware of the importance of maintaining their health.

Since the topic of our study only involves the people in Malaysia, let us look at some previous statistics of obesity in Malaysia. According to the World Health Organization (WHO), 17.7% of adults (ages 18 and above) were overweight in 2015 (Lum, 2018). Considering that the number of populations in Malaysia in 2015 was around 30 million people, 17.7% of them would make a staggering total of 5.3 million people who are overweight. This shows that a huge amount of people in Malaysia are unhealthy, which caused us to ponder, are Malaysians aware of the importance of the wellness of their health?

Hence, this study is carried out in order to determine the health awareness of Malaysians. Primary data were collected by us personally, by creating and distributing survey forms to our friends and relatives to be filled. The main emphasis of our survey forms was to collect the respondents' gender, heights, weights, ages, hours of exercise per week, and also some simple rating questions based on health awareness. The data that we collected and analyzed thoroughly will be discussed in the following contents of this case study report in order to show the health awareness of Malaysians. There will be various types of graphs and plots used to ease and support us in our discussion, and all of the graphs and plots will be broken down and explained in detail.

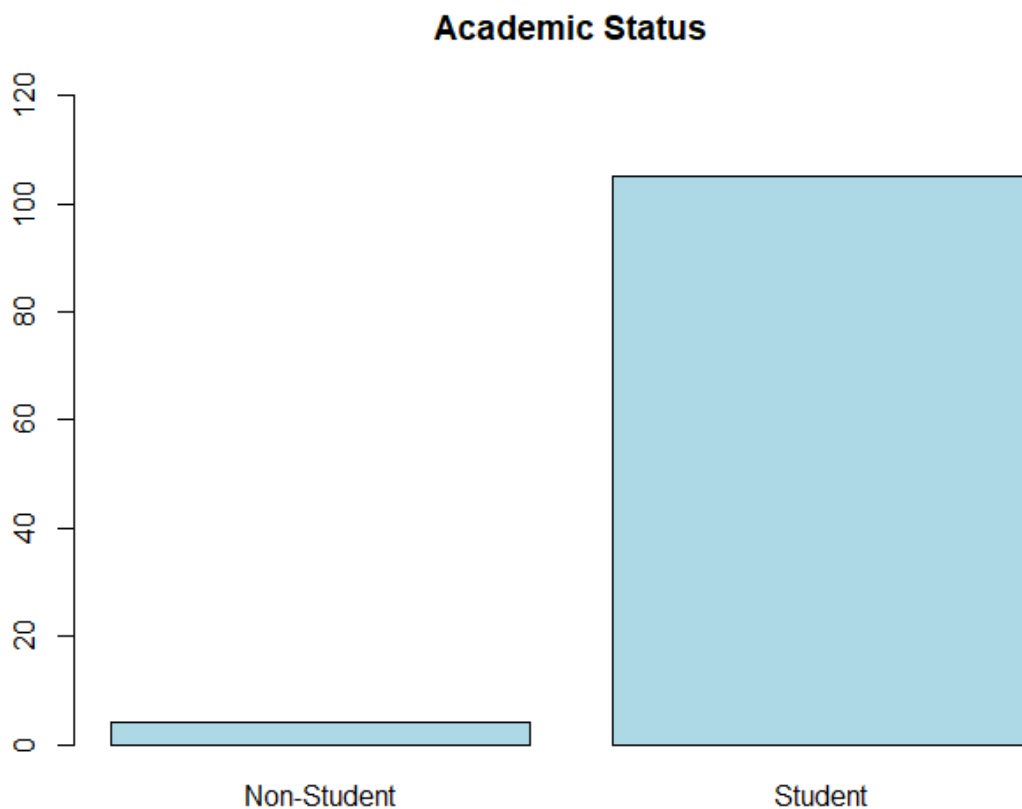
However, it is crucial to note that most of our respondents were friends of more or less the same age as us (around 20 years old). Thus, the data set that we collected will more accurately provide an insight on the health awareness of Malaysians among adolescence, rather than among Malaysians of all ages.

The following contents of this report will focus on proving whether Malaysians are aware of the importance of the wellbeing of their health, supported by all sorts of graphs and plots relevant to the point of the discussion. Lastly, we will use all the information depicted from our discussion in order to answer the objective of our study; Health awareness of Malaysians. More specifically, we will answer the question "Are Malaysians aware about the importance staying healthy?"

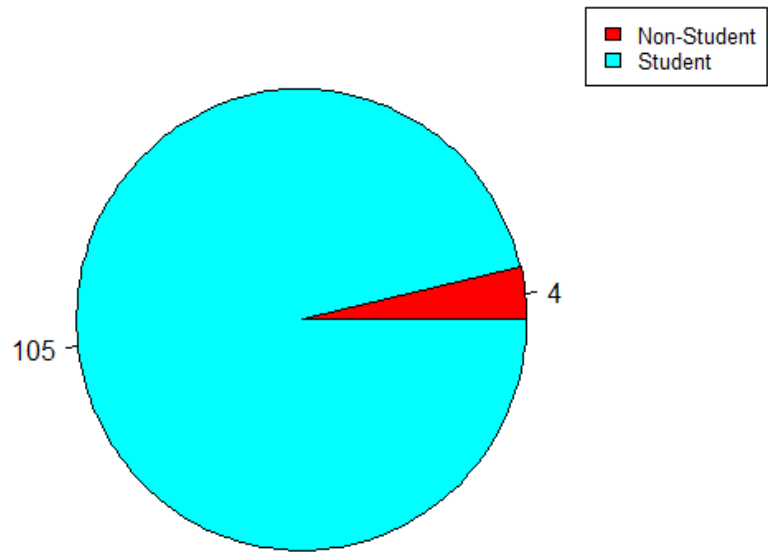
Content

The purpose of this survey is to determine the level of health awareness among Malaysians of different ages and physiques. Besides that, we also aim to raise the health awareness of Malaysians. We have set several questions in our questionnaire to collect the data for further analysis. Our questions included the personal information of the respondent like age, weight and other habits in exercise of the respondent. We have received 109 replies from students and non-students. From the survey, we can know that 72 of respondents are male (66%) and 37 are female (34%). The majority of the respondents are students (96.3%), and the non-student respondents are at a number of 4 (3.7%) in this survey. Hence, this survey will provide an accurate insight on health awareness among students because most of the respondents are students.

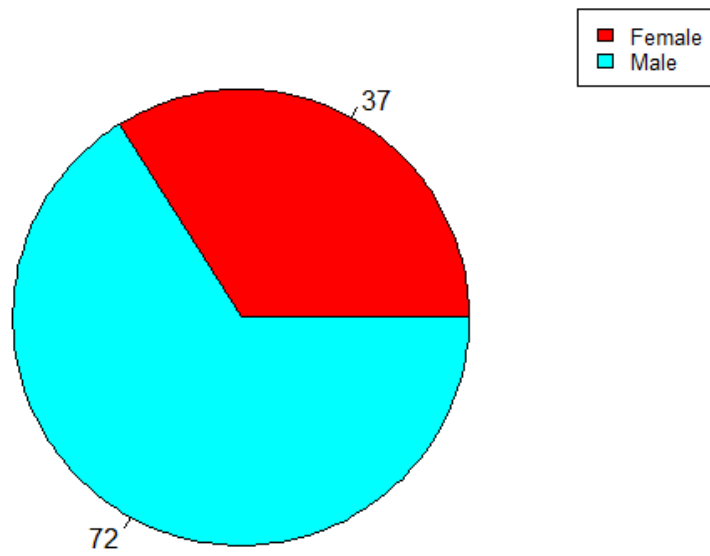
These statistics are illustrated by some of the following pie charts and bar charts:



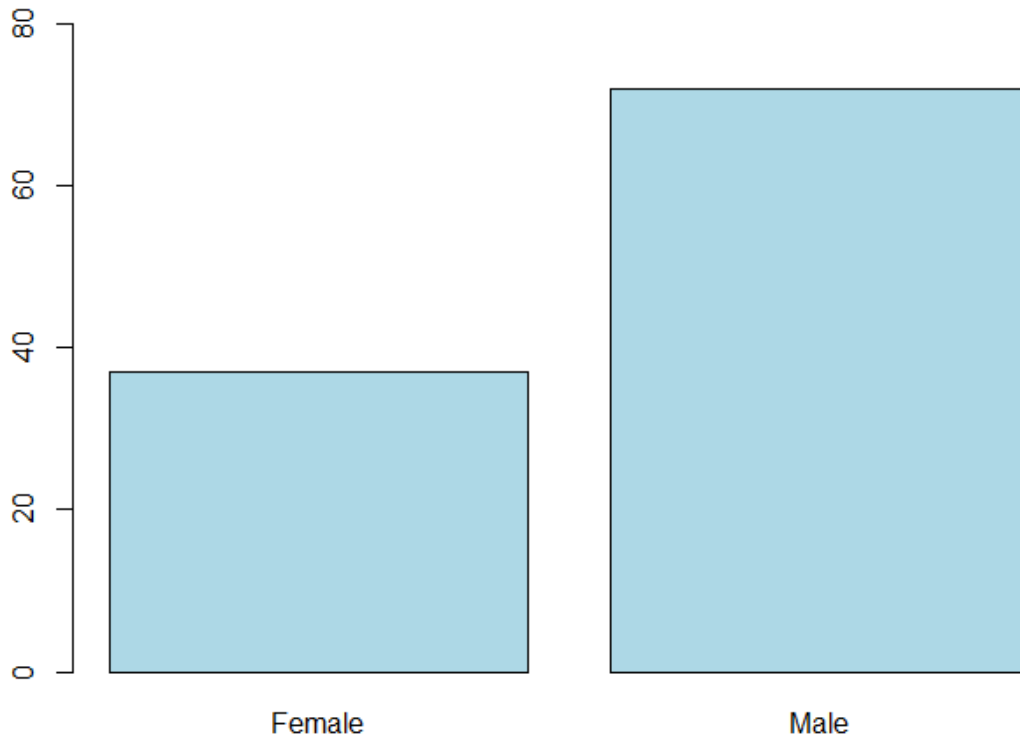
Academic Status



The Gender

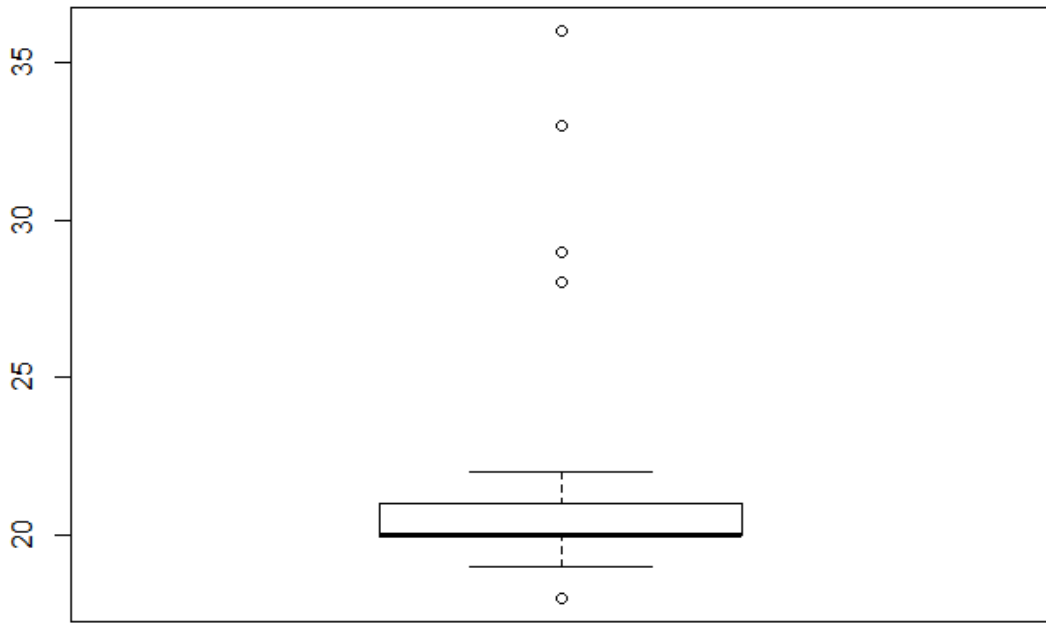


The Gender

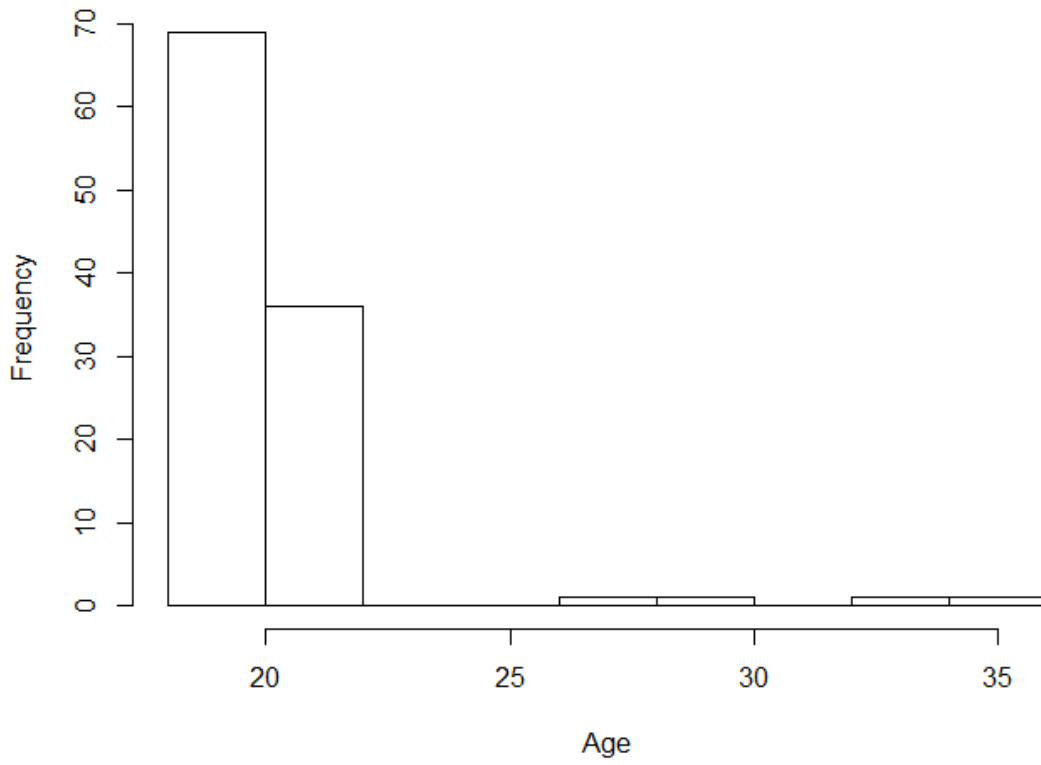


The age of most respondents is in the range of 20 to 39 years old (83.5%) in the survey and roughly 16.5% of respondents are in the category below 20 years old. The following boxplot and histogram illustrate the data of age according to our survey. It can be seen clearly from the boxplot that the median, first quartile, and third quartile all are between 20 to 25 years old, with a few outliers above 25 years old and below 20 years old. On the other hand, the histogram clearly shows that most of the respondents are aged below 25 years old. This tells us that most of the information that we will be able to gather through this survey will only accurately depict the health awareness of Malaysians among young adults.

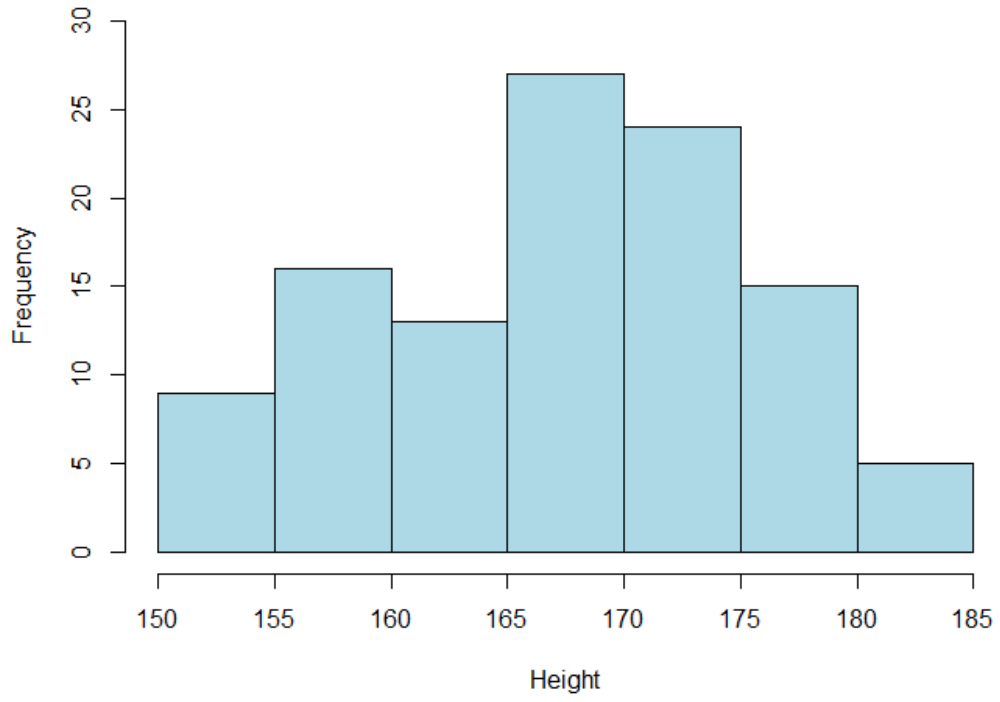
Age box plot



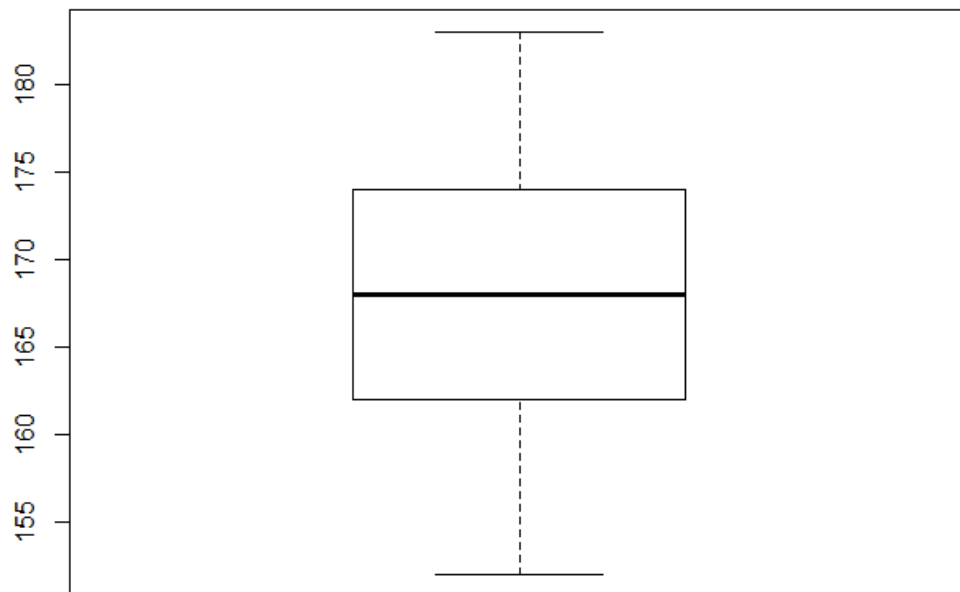
Histogram of Age



Histogram of Height



Height box plot



Height Frequency Distribution

Height(cm)	Frequency	Relative Frequency
150-159	24	0.22
160-169	39	0.36
170-179	39	0.36
180-189	7	0.06

Stem and leaf of Height

The decimal point is 1 digit(s) to the right of the |

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17 | 01122222233334444555556677778889999

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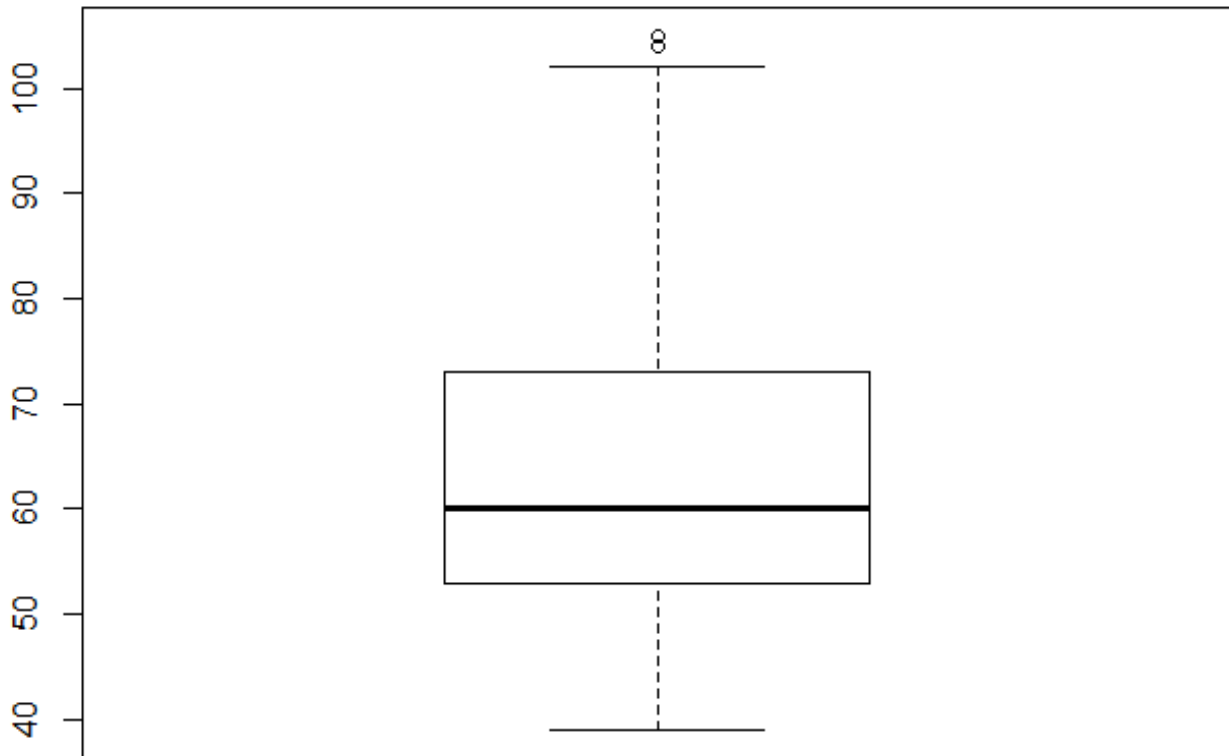
Stem:hundreds;Leaf:ones

From the histogram above, it can be seen that the majority of respondents (35.8%) have a height ranging from 160cm to 169cm with a few (6.4%) that have a height of 180cm to 189cm. We can see that the median, first quartile and third quartile are all between the range of 160cm to 175cm and there are no outliers in the box plot. In the frequency distribution of height, we can see that there is a 36% for a Malaysian young adult to be in the range of 160 to 169cm or in the range of 170 to 179cm. The stem and leaf graphical representation with a stem of hundreds and leaf of ones shows the exact value of height for our respondents and it can be seen that the majority of our respondents are located in the range of 160 to 169cm. The data above can be used to determine the average height of a Malaysian young adult since 96.3% of the data is mostly obtained from students as mentioned above. In order to better understand their health condition, we will analyze further into their weights and try to calculate the relative BMI's in order to determine whether they have a healthy body mass index (BMI).

For the weight section, the data obtained according to the graphical representations below show that most of the respondents are weighted in between 40 to 70kg. Respondents that weigh above 70kg and below 40kg are the minority. Most of the respondents are weighed at around 50kg to 60kg. For the box plot, it can be seen that the median, first quartile and third quartile lie in between the range of 50kg to below 80kg, with a median of roughly 60kg. There are outliers which can be used to show that the weight of some respondents is slightly out of the norm relative to all our respondents' weights. The stem and leaf with a stem of tens and leaf of ones shows the exact value of weight of the respondents. It shows that most of the respondents are

located in the range of 50 to 59kg. We can determine that 48% of Malaysian young adults are in the range of 60 to 79kg by looking at the relative frequency of the frequency distribution of weight.

Weight boxplot



Stem and leaf of Weight

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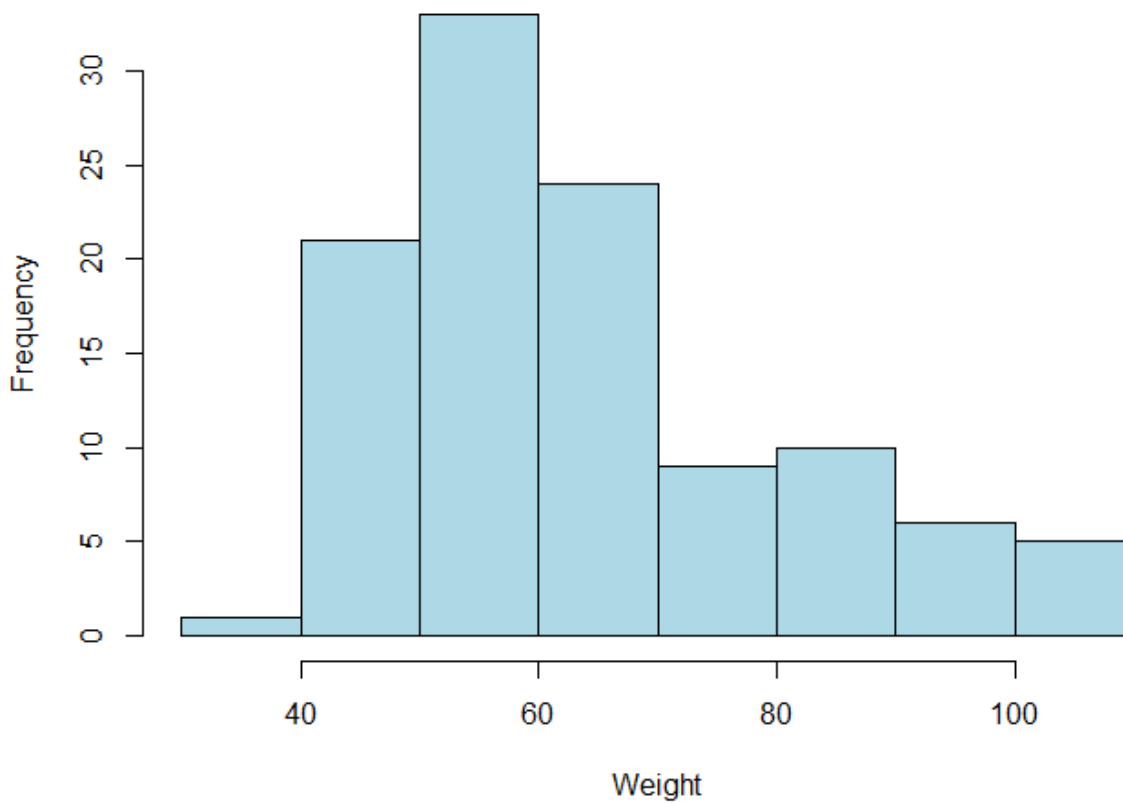
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4 | 3344555666777788899
5 | 0022223334455555556678888888889
6 | 022222233445556667888899
7 | 11357888
8 | 01122223679
9 | 122345
10 | 22445

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Stem:tens;Leaf:ones

Histogram of Weight



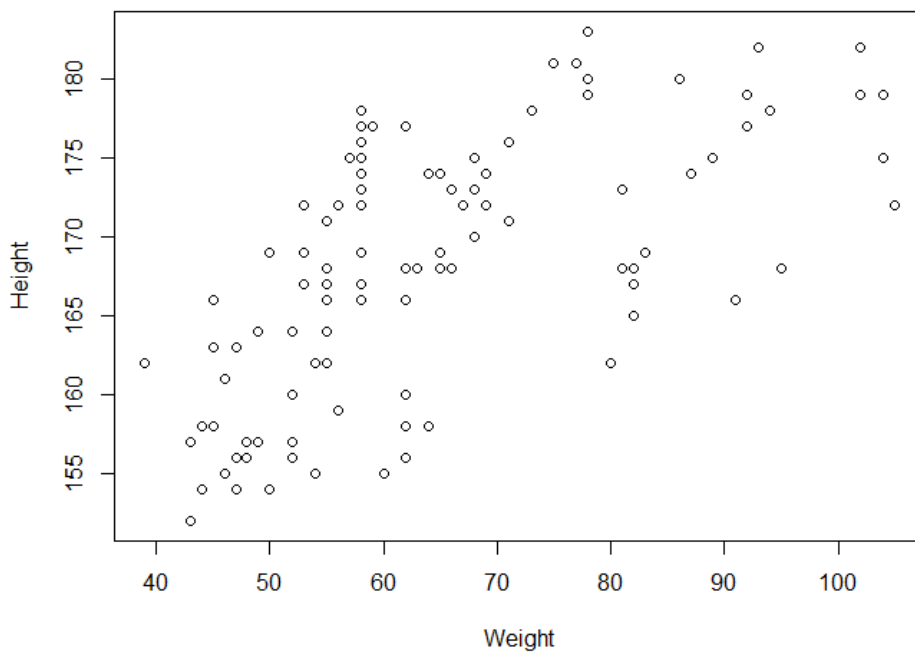
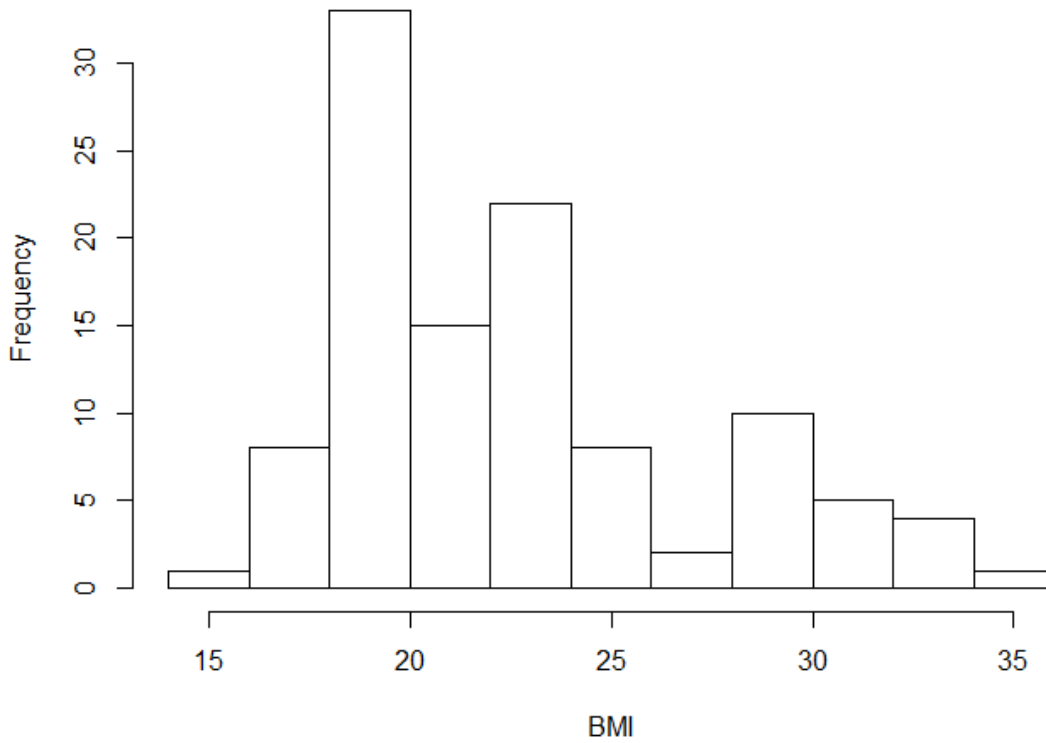
Weight Frequency Distribution

Weight(kg)	Frequency	Relative Frequency
20-39	5	0.05
40-59	1	0.01
60-79	53	0.48
80-99	33	0.30
100-119	17	0.16

We have calculated the Body Mass Index (BMI) of our respondents by using the formula: $BMI = \text{weight (kg)} \times \text{height (m)}^2$; which resulted in the following histogram. From the histogram of BMI, we can see that most of the respondents have a healthy BMI, which is within the range of 18.5 to 24.9 for most adults, even though there might be some within this range who are still slightly underweight with a BMI of less than 18.5. However, there are quite a number of respondents that have unhealthy BMI, some

have BMI's between 25 until 29.9 which indicates that they are overweight, a few respondents with BMI's between 30 until 39.9 which indicates that they are obese. In short, the data shows that an average Malaysian young adult have a BMI that is considered as healthy, but there are still a number of individuals who are overweight, and very few who are classified as underweight or obese.

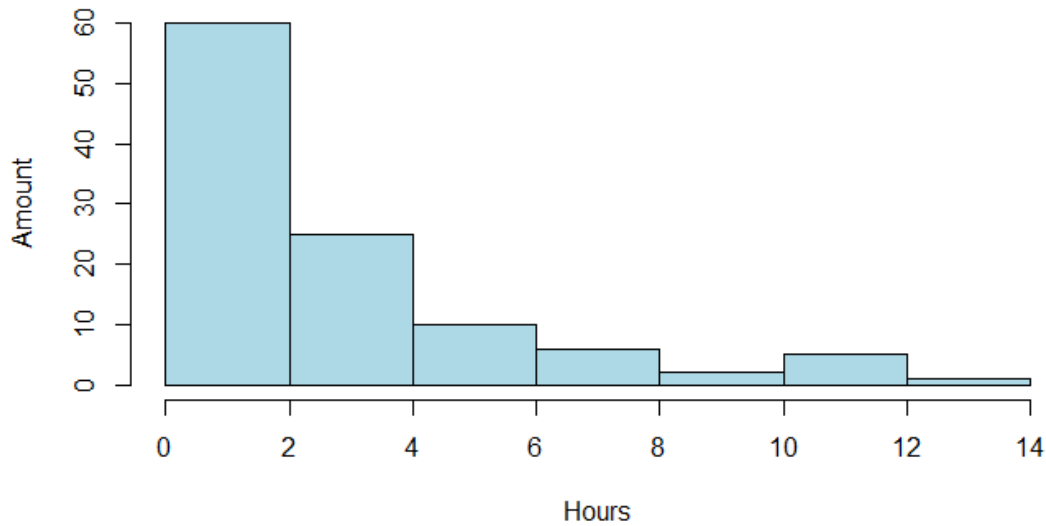
Histogram of BMI



This is a scattered plot of the weight and height of the respondents which shows the corresponding weight to each height. At a glance we can see that most of the respondents have a weight in the range of 40kg to 70kg and a height in the range of 155cm to 175cm. This shows that the height and weight ratio among young adults of Malaysia are not consistent and there is a fair mix of underweight, healthy, overweight, and obese individuals. We can clearly see that a large cluster of respondent weight between 40kg to 70kg, with their heights ranging from 155cm to 180cm. This means that many of them have BMI's from 16.6 (underweight) to 21.6 (healthy) although there might be some outliers within this range who are overweight or obese, but this generally tell us that most Malaysian young adults are either healthy or slightly underweight. Another cluster on the right of this scatter plot shows that there are also quite a number of respondents who weighs between 80 to 110kg and are between 160 to 180cm tall. This cluster has a BMI range between 31.25 to 33.95, which means that there are a number of young adults who are overweight and obese. This scatter plot goes hand in hand with the histogram of BMI to show us that Malaysian young adults have a fairly mixed BMI with some underweight, many healthy, some overweight, and a few who are obese.

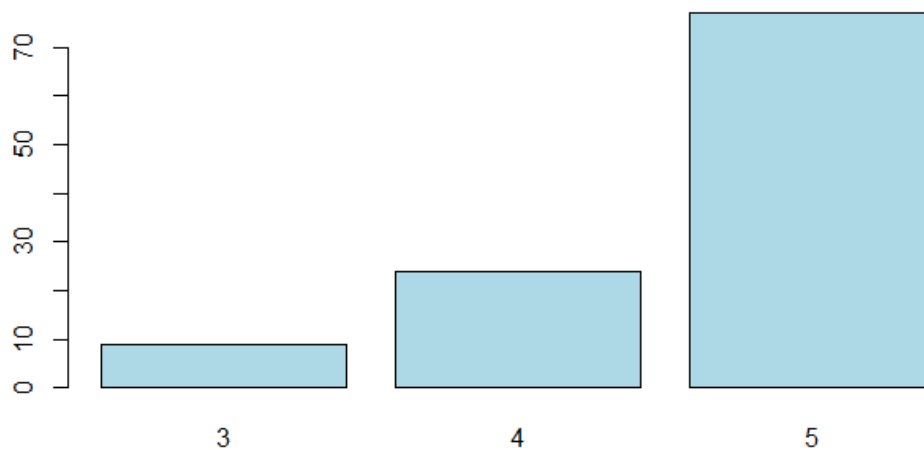
Next, in order to know the level of health awareness of Malaysians, we have asked the respondents about their weekly exercise routine to get an idea of how many hours each of them spends on exercising in a week. From the graph above, we know that most of our respondents (47.7%) exercise less than 2 hours a week and 30.3% of respondents spend 2 to 4 hours a week to exercise. 9.2% exercise for 5 to 6 hours in a week. Moreover, 6 respondents (5.5%) exercise 7 to 8 hours a week whereas the remaining respondents (7.3%) spend 9 hours or more in a week for exercise. From the collection of data above, we can understand that most of our respondents are spending less than 2 hours in a week for exercising, however, it cannot accurately show that Malaysians are not aware of their health because some of the respondents in this category might have many reasons as to why they do not exercise much, they might be aware about their health but are unable to exercise due to some underlying health conditions that they were born with such as asthma or weak bone structures. It is recommended that a healthy adult should exercise at least 2.5 hours per week, any longer than that depends on an individual's personal fitness goals. Hence, we can conclude that Malaysian young adults have healthy exercise durations since 52.3% of respondents exercise more than 2 hours a week, which can show that Malaysian young adults are aware of the importance of their health.

Hours of exercise in a week



Meanwhile, we asked our respondents to rate how important they think adequate exercise is for their health from 1 to 5. The ratings 1 and 2 means that they strongly disagree or disagree with the statement whereas ratings 3, 4 and 5 means that they are either neutral, agree or strongly agree with the statement. From the following bar chart, we can see that all of our respondents agree that adequate exercise is important for our health. Note that there a few individuals that are neutral but almost all of the respondents (91.7%) either agree or strongly agree with the statement that exercising regularly is important. This means that most of the respondents aware and conscious about their health because they understand the importance of exercise.

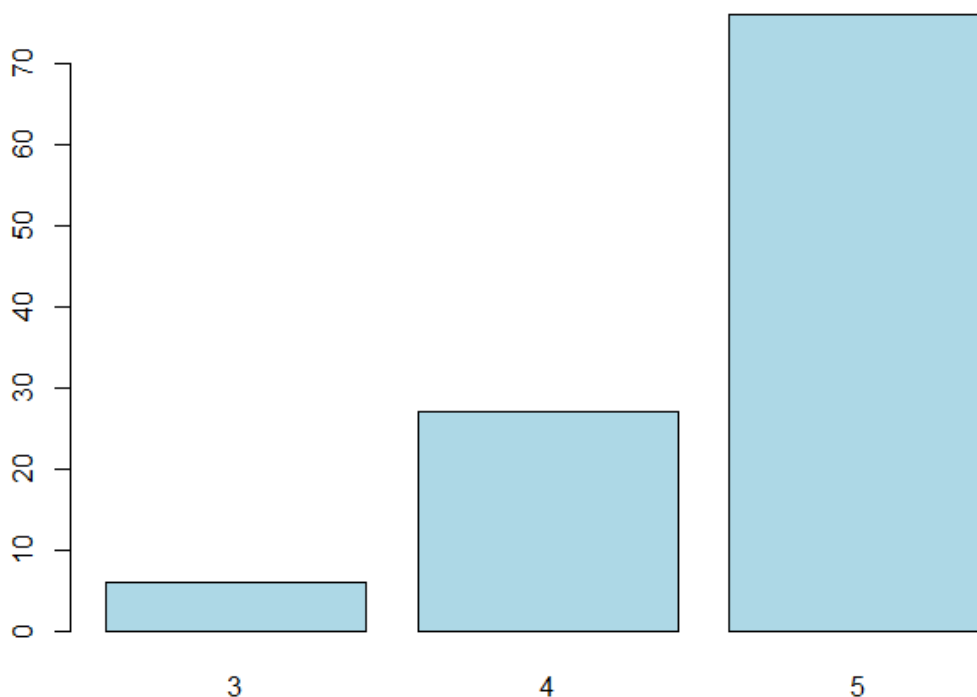
The importance of exercising regularly



‘You are what you eat’, quoted by Anthelme Brillat-Sarvin. This quote implies that if we eat what is considered to be healthy we will be healthy and if we eat what is considered unhealthy will make us unhealthy. Based on this fact, we asked the respondents to rate whether or not they agree that having a

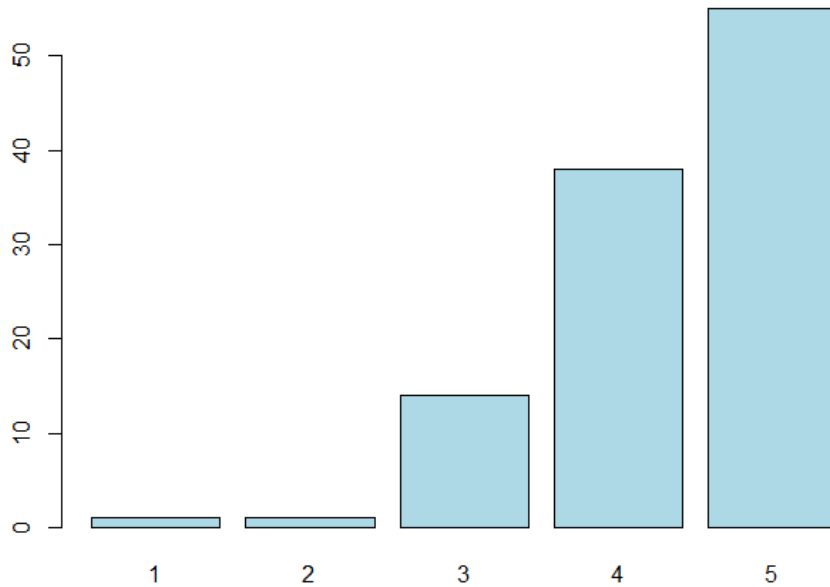
balanced diet is important for their health. As a result, most of the respondents believe that a balanced diet will make a good impact on our health. From the following bar chart, we can see that almost all of our respondents agree that a balanced diet is important for our health. This proves that Malaysian young adults are clearly aware of what makes them healthy. The reason for this might be due to the Malaysian education system that emphasizes the importance of a balanced diet even since primary school. Many Malaysian students are thought to always have a balanced diet according to the food pyramid and I think it is important to teach future generations about this concept which plays a crucial part in a healthy lifestyle.

The importance of having balance diet



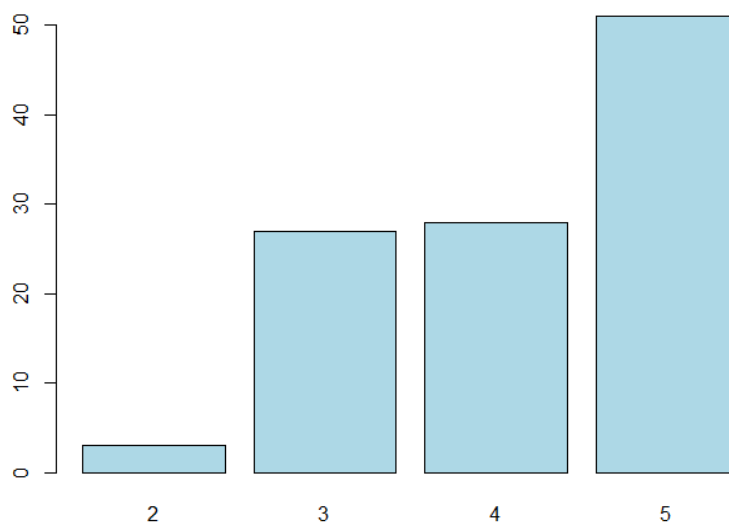
Moving on, taking meals on time is also important for our health. From the bar chart below, we can see that little to none of the respondents do not agree with that statement. As expected, almost all of the respondents agree that taking meals on time are crucial to maintaining good health. This shows that Malaysian young adults are indeed aware about their well being. In fact, taking our meals on time is important because if we skip meals or have meals at irregular periods, it will cause many health issues such as gastric problems, indigestion, or stomach ache. Comparing the following bar chart to the previous 2, we can conclude that Malaysian young adults are clearly aware about their health because almost all of the respondents agree that taking meals on time, having a balanced diet, and exercising regularly are very important to keep us healthy.

The importance of taking meal on time to health



Lastly, exercise helps to reduce stress, anxiety and depression. Some research stated that exercise will produce endorphin which is the chemical in our brain that act as natural painkillers and also improve the ability to sleep, which in turn reduces stress. There are a few out of 109 respondents that disagree with the statement that exercise can reduce stress, but most of the respondents agreed with the statement. From the following bar chart, we can see that a majority of the respondents strongly agree to the statement, many agreed, and some are neutral about this statement while only a few disagreed. Nevertheless, this is still a strong indicator that many Malaysian young adults are aware that exercising helps to reduce stress and hence they are aware about the wellbeing of their health.

The importance of exercise to reduce stress



Conclusion

In conclusion, it is clear that Malaysian young adults are aware about the importance staying healthy, and know how to keep themselves healthy. The results of this study can only accurately depict the health awareness among Malaysian young adults because they are the main respondents in our survey. We can clearly see that the majority of respondents are male and belong to students and are under the age of 20. We analyzed the physiques of the respondents and found that most of the respondents weighed around 40kg to 70kg and have a height of 165cm to 175cm, which translates to a healthy BMI range between 18.5 to 24.9, with a few cases of underweight, overweight, and obese. Furthermore, it can be seen that they possess health awareness because they agreed that exercising regularly is important, exercising can reduce stress, balanced diet is important and taking meals on time is important and hence it can be said that the majority of respondents are healthy. An individual should exercise at least 2.5 hours per week but the data shows that many respondents exercise less than 2 hours a week even though they know that exercising regularly is important. This might be due to work, studies or some birth-given health issues which prevents them from exercising regularly. Although most Malaysians do possess the health awareness, it cannot be denied that there is still a part of our society who are not aware of how to keep themselves healthy. To solve this issue, the government and non-government organizations should work together to increase the people's awareness towards the importance their health and propose some interesting activities in order to teach and motivate them to maintain a good health. Therefore, it can be concluded that Malaysian adolescences are aware about the importance staying healthy and are mostly healthy as they are not obese or malnourished.

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