UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECI2143 PROBABILITY & STATISTICAL DATA ANALYSIS

SEMESTER II 2020/2021

FAST FOOD FRENZY
GROUP PROJECT

No.	TEAM OMEGA	
1	AFIF HAZMIE ARSYAD BIN AGUS	A20EC0176
2	AHMAD AIMAN HAFIZI BIN MUHAMMAD	A20EC0177
3	LUQMAN ARIFF BIN NOOR AZHAR	A20EC0202
4	MUHAMMAD IMRAN HAKIMI BIN MOHD SHUKRI	A20EC0213

Lecturer:
DR. CHAN WENG HOWE

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CONTENT OF REPORT

1.0 BACKGROUND OF STUDY

We have all heard of the rumour that obesity rates are rising globally. Though we are not here to debunk that fact, instead we are trying to see it with our own eyes through a study. There are many factors that contribute to the rise of obesity but we chose an unhealthy diet for our study. However, to make our data collection easier we have settled for fast food intake in Malaysian's diet. It has been quite clear of the effects of fast food though, we also would like to see what Malaysians think is the cause of the jump in obesity rate. By doing this study, perhaps we could then see the problem from another point of view or possibly highlight a hidden hand that has been the other major cause to our issue here. Occasionally, different opinions on a certain topic could give a clearer view on the matter at hand rather than just having one same view of it.

It is said that eating fast food is one of the major causes for excessive weight gain which then could lead to obesity (Pietrangelo, 2018). We also wanted to see what the locals think of fast food and just how frequent they include it in their diet. This is due to the fact that Malaysia has seen a growth in obesity rate especially during the lockdown (The Star Online, 2020). This has encouraged us as a team even more to continue with this study as we could take this opportunity to get our hands on something that has been happening nationwide and has been confirmed by a trusted local source.

2.0 Data Collection/Methodology

This survey aimed to receive responses from Malaysia citizens from any age. An online survey was conducted through the usage of Google Form. 100 Malaysia citizens had given some of their time to participate and give their responses in this survey. A list of 18 questions were prepared by our group members. The questions were divided according to their respective outcome types which we created 4 different sections. The first section questions were the respondent demographic information which include gender, age, current location, weight in kg and height in cm. Next, the second section is the respondent preference on fast food which is the liking of fast food, why preferred fast food, type of fast food brand/branch, accessible to fast food and prefer to eat fast food than any other food. The third section in the survey are for frequency of buying fast food which include average fast food bought within last month, average

money spent on fast food within a month, number of portions bought every time eat fast food and time taken to finish up eating fast food. Lastly, awareness sections include questions such as fast food as the main cause of obesity, choose to eat fast food after knowing its severe impact on health, opinion on main cause of obesity, best method to prevent obesity.

The followings are the nominal scale variables that will be used in our data analysis:

1. Gender: Male or Female
2. Current location: the choices are all states in Malaysia.
3. Reasons people preferred fast food. (quick to get, easy to get, tasty, etc)
4. Type of fast food branch preferred. (McDonald, Pizza Hut, etc)
5. Main cause of obesity. (Unhealthy diet, genetics, lack of exercises, etc)
6. Best method to prevent obesity. (Healthy diet, having good genetics, etc)

The following are the ordinal/interval scale variables that will be used in our data analysis:

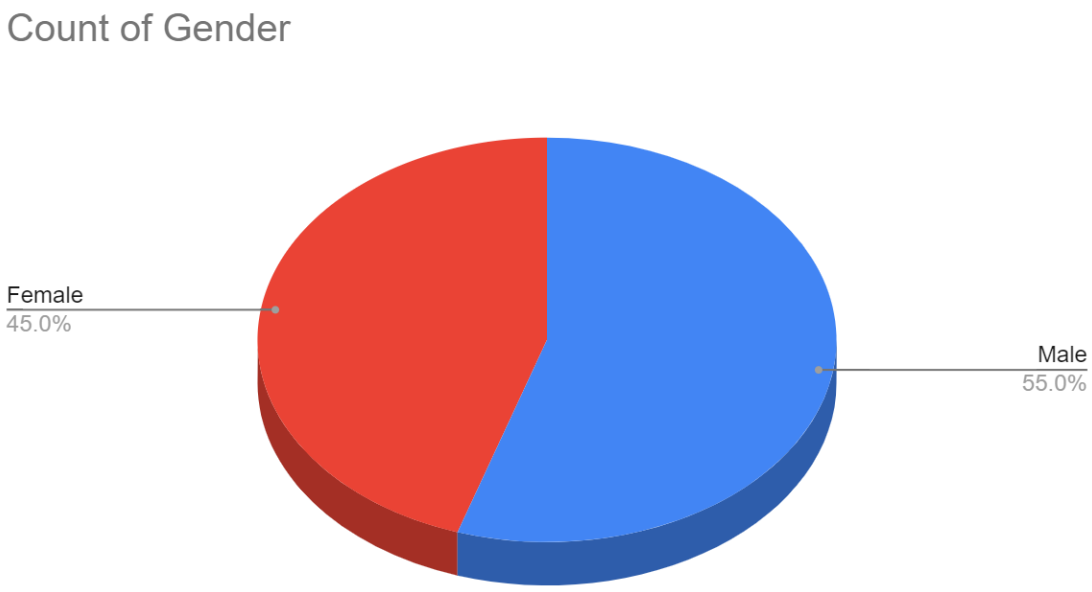
1. Respondent height and weight: for BMI calculating.
2. How much do respondents like fast food? (1: strongly dislike to 5: strongly like)
3. Accessible to fast food around the respondent area. (1: unattainable to 5: easily attainable)
4. Preferred fast food than any other food. (1: very unlikely to 5: very likely)
5. Average eating fast food within a month. (1 - 3, 4 - 6, 7 - 9, etc)
6. Average portion of fast food buy. (1 - 3, 4 - 6, more than 7)
7. Fast food as the main cause of obesity. (1: strongly disagree to 5 strongly agree)
8. Still eat fast food after knowing its impact on health. (1: never to 5: certainly)

The following are the ratio scale variables that will be used in our data analysis:

1. Age: distribute into 4 group of ages
2. Average spend on fast food within a month (less than RM20, RM20 - RM30, etc)
3. Time taken for respondents to finish their food. (1 - 5 minutes, 6 - 10 minutes, etc)

3.0 DATA ANALYSIS

3.1 Respondent Demographic Data



Pie chart 1

Pie chart 1 shows the gender types of the respondents which are divided into 2 groups namely male and female. From what can be seen, there are a total of 55 respondents (55.0%) who are male. Meanwhile, the rest are female respondents, a total of 45 people (45.0%).

Based on the percentage of the pie chart above, the majority of the respondents are male respondents (55.0%) which covers more than half of the pie chart compared to the female respondents (45.0%).

Generally, we can say that women are more diligent and quick to help fill out the required forms. but the data of our study have shown the opposite result. It can also be said with whom we distribute this google form. One of our group members has a lot of male friends because of his previous school.

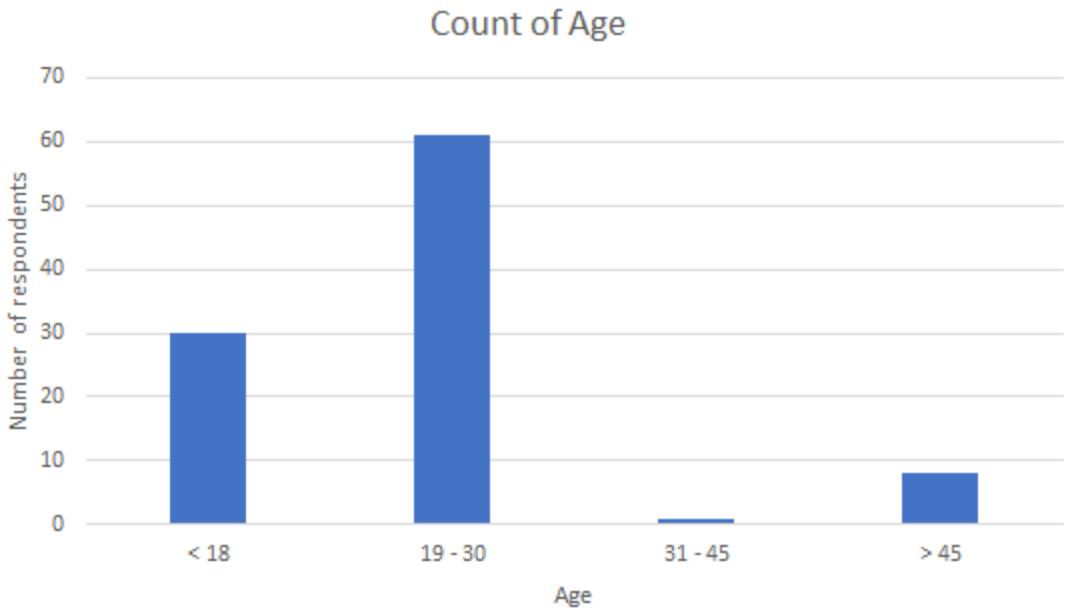
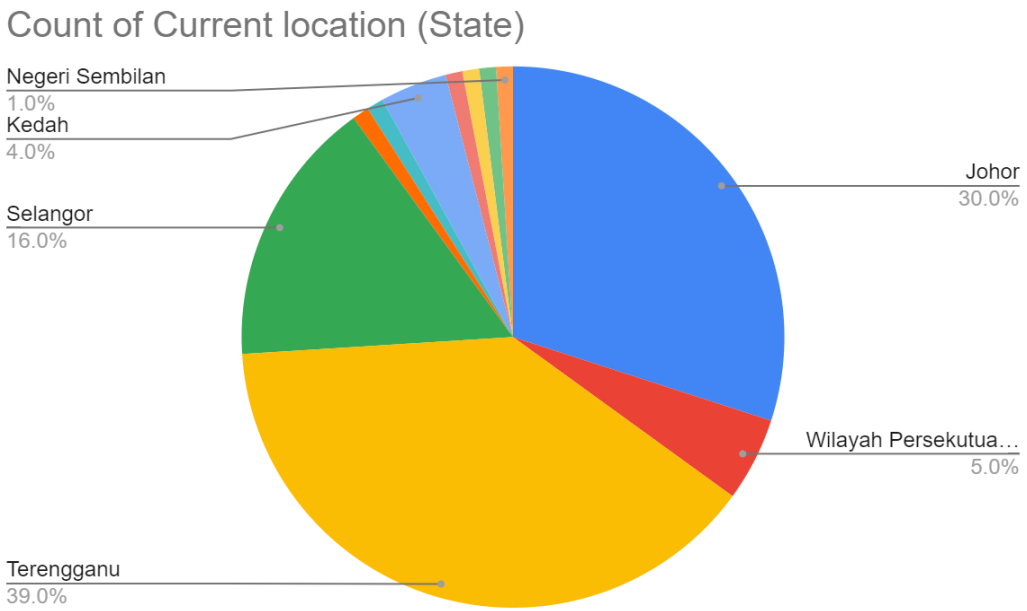


Diagram 1

Bar chart above displays the count of age of all respondents participating in the survey. From our primary observations, we can see that respondents aged from 19 - 30 years are among the majority that participated in this survey (61 respondents). There are also 30 respondents age below 18 years old and 8% of the total respondents (8 respondents) above 45 years old. Only 1 respondent (1%) aged 31 - 45 years and is considered to be the minority of the age group.



Pie chart 2

Pie chart 2 represents the location distribution of the 100 respondents. The answer choices for the question are all the states in Malaysia including Wilayah Persekutuan Putrajaya and Wilayah Persekutuan Labuan which the total answer choices is 16. Based on the chart, 30 respondents (30.0%) are from Johor. 5 respondents (5.0%) are from Wilayah Persekutuan Kuala Lumpur. A total of 39 respondents (39.0%) are from Terengganu. Next, 16 respondents (16.0%) are from Selangor. 4 respondents (4.0%) are from Kedah. Lastly, only 1 responden (1.0%) from each states which are Perak, Pahang, Negeri Sembilan, Melaka, Pulau Penang and Sabah.

According to the percentage shown in pie chart 2, Terengganu has the largest number of respondents who participate in our survey which is 39.0% from 100 respondents. The second largest with a total of 30 respondents are from Johor. Terengganu and Johor has the largest number of respondents because mostly our group members are from those states. None of the respondent were from Kelantan, Perlis, Wilayah Persekutuan Labuan, Wilayah Persekutuan Putrajaya and Sarawak.

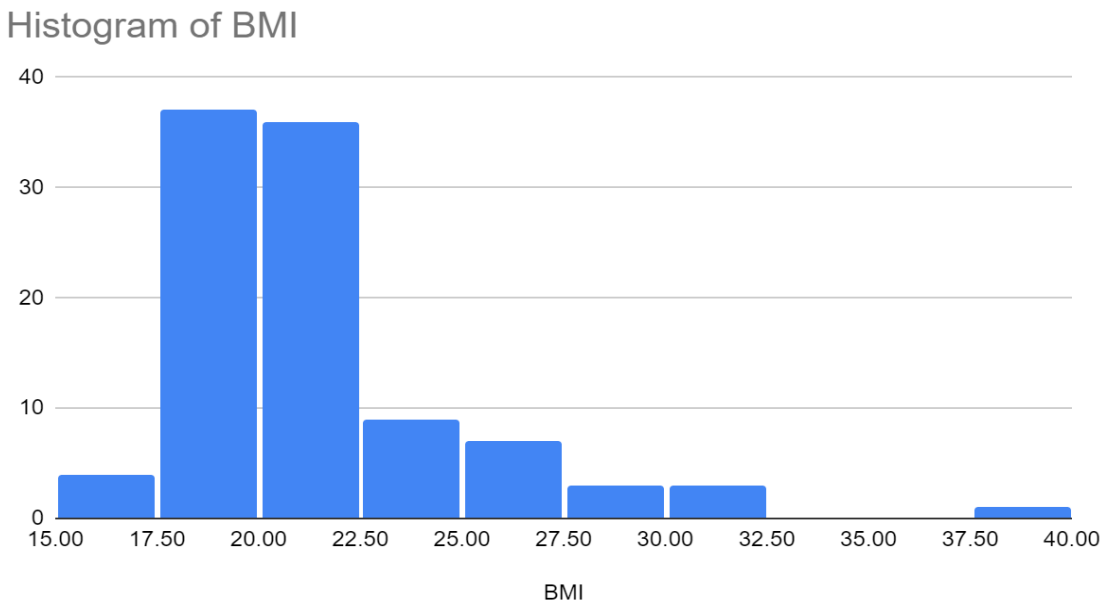


Diagram 2

Diagram 2 above shows a histogram which represents BMI for the respondents. BMI, a short form for Body Mass Index is a ratio of a person's weight to his or her height. It's more of a guide than a precise calculation of a person's overall body fat. The questions that were originally asked in the survey were the respondent height and weight. After receiving the data from respondents, we calculate their BMI using Google Spreadsheet.

BMI values were divided into 4 weight groups. The first weight group is called underweight which the value is below 18.5. Next is called the normal BMI which is in the interval from 18.5 - 24.9. After the normal BMI group is called overweight which has values from 25.0 - 29.9. The last known BMI group is called obese or obesity which the value is 30.0 and above.

Based on respondents data on diagram 2 above, our group has sorted that 15 respondents (15.0%) belong in the underweight category. Next 71 respondents (71.0%) are in the normal BMI category. 12 respondents (12.0%) are in the overweight category and only 2 respondents (2.0%) are in the obese weight group. Majority of the respondents belong to the normal BMI group (71.0%) .

3.2 Preference

For this section, we would like to know the reasons for the participant's preference for fast food compared to other foods.

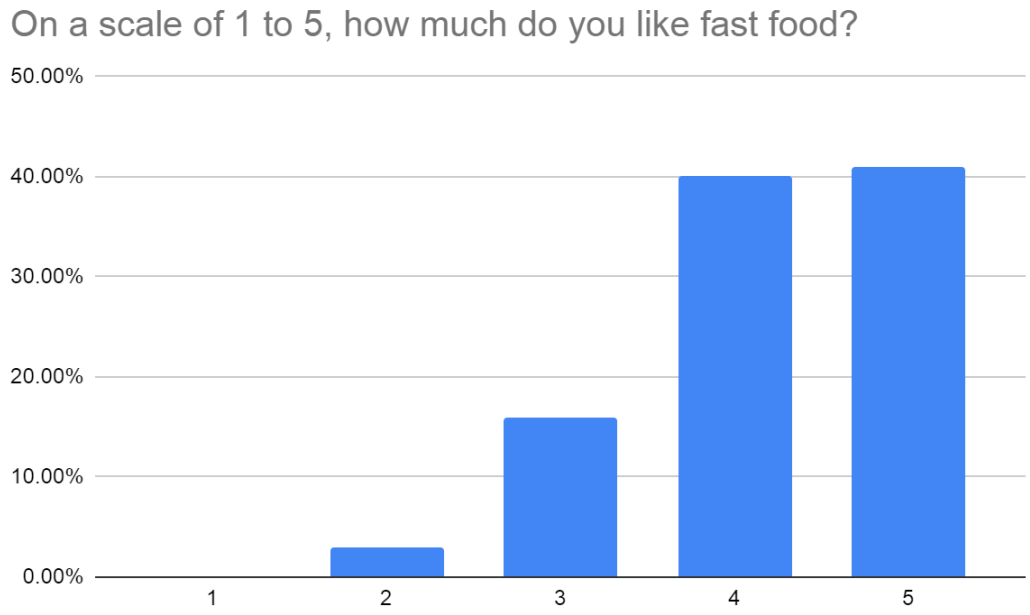
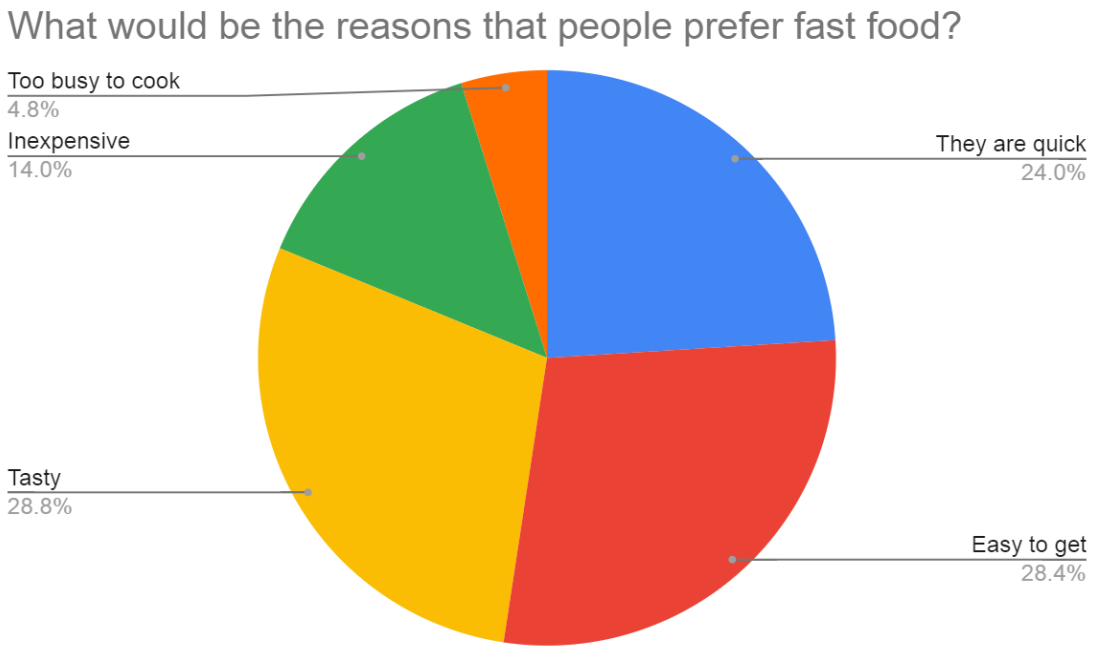


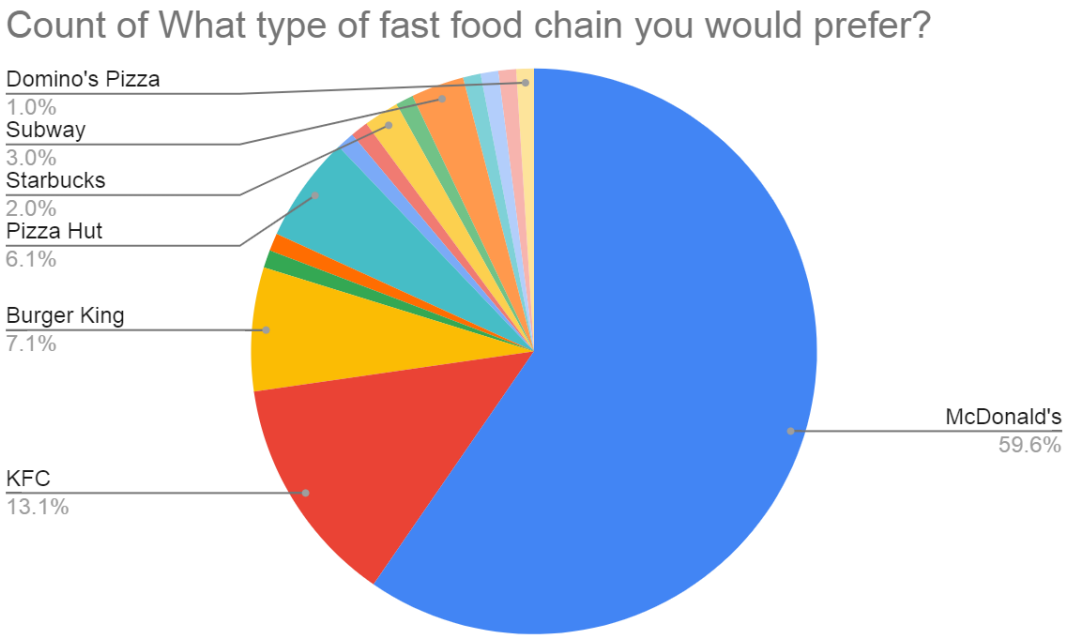
Diagram 3

For question 1, we asked our participants just how much they like fast food on a scale of 1 to 5 and put together the data in a bar chart as shown above, '1' for "strongly dislike" and '5' for "strongly like". The most response we got was strongly like which is 41% out of our 100 respondents. Followed by 40 people responding like which is just a 1% difference from "strongly like". The other 16% and 3% answered "neutral" and "disliked respectively". No one answered "strongly dislike" which is why we can conclude that the majority of participants enjoy eating fast food. Perhaps the rise of obesity rate could be explained by just how much people enjoy eating fast food.



Pie Chart 3

For question 2 , we asked our participants what would be the reasons some people prefer fast food which can be represented in the pie chart above. 28.8% of our participants think fast food is more preferred because it is tasty. 28.4% think it is easy to get and another 24% think it can be served quickly. 14% say it is because of how inexpensive it is and the rest reckon some people are too busy to cook. For what we can conclude from this question is that the majority of our respondents think people favours fast food because of its taste. In addition, from the other options, fast food is also quite convenient for the consumers which could explain why there was not much of a difference in percentage for the second most answer. Possibly the few reasons why we are seeing a rise in obesity rate is because people eat fast food to enjoy its taste for pleasure rather than eating it as their last resort.



Pie Chart 4

For question 3, the pie chart represents the percentage of fast food chains our participants would prefer. 59.6% of them answered McDonald's followed by 13.1% answering KFC. Despite the number of McDonald's outlets here in Malaysia, which is about 300 nationwide (Mcdonalds.com.my, 2021) is still the locals favourite compared to KFC which has over 600 outlets operating here in Malaysia (Kfc.com.my, 2021).

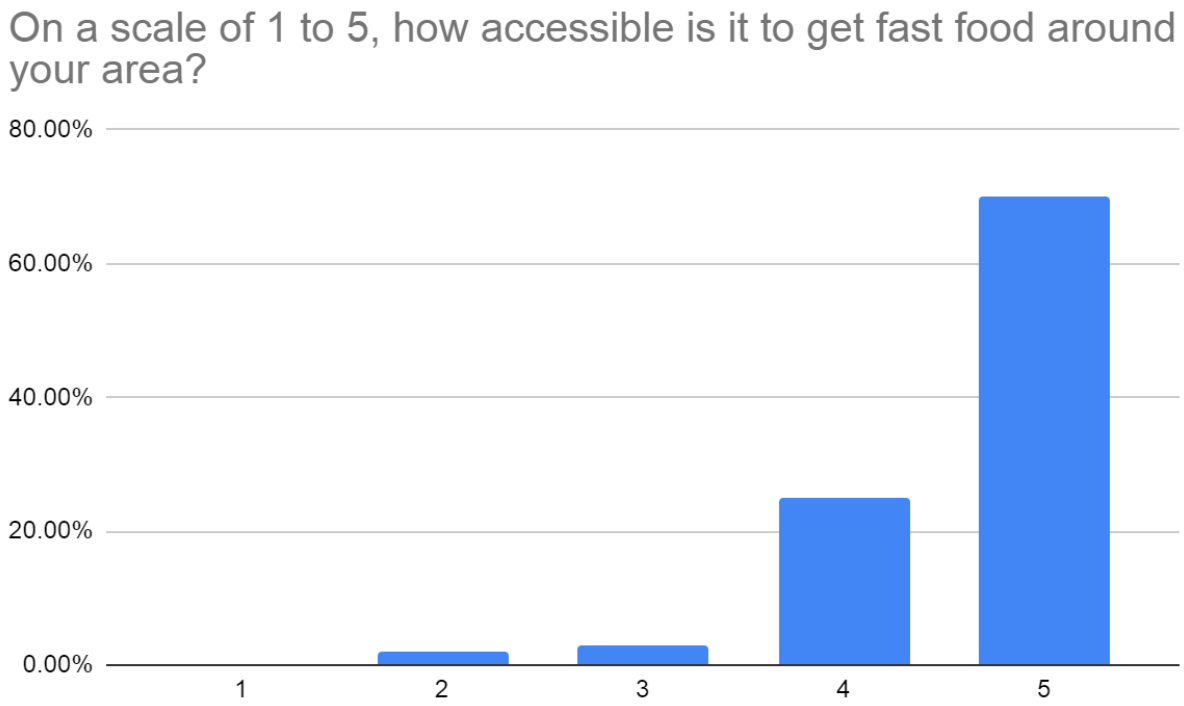


Diagram 4

For question 4, we asked our participants how accessible it is for them to get fast food in their vicinity. The bar chart shows 70% of them answered '5', or "easily attainable" followed by 25% answering '4', or "attainable". The other 5% answered both "neutral" and "quite unattainable" for 3% and 2% respectively. Perhaps we could make an assumption that one of the few reasons which led to a rise in obesity rate was just how accessible it is for people to get fast food in their area.

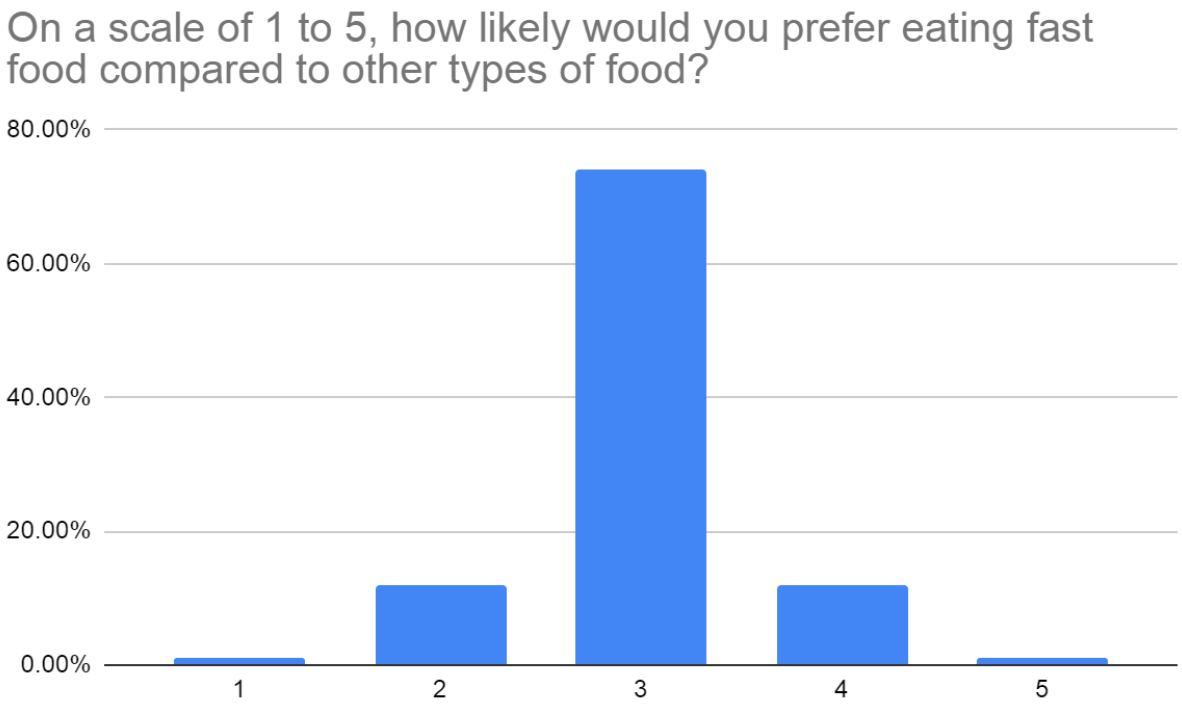
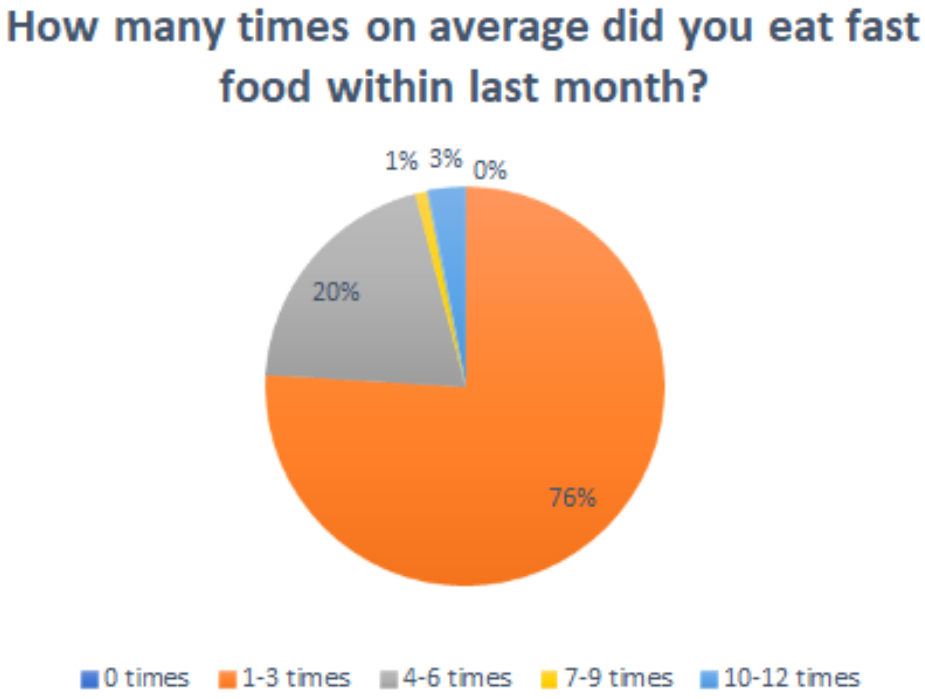


Diagram 5

For question 5, we asked how likely they would prefer eating fast food rather than other types of food. The bar chart shows how our participants would prefer eating fast food on a scale of 1 to 5. More than half, which is about 74% choose '3', or "neutral" and both '2', or "unlikely" and '4', or "likely" make up 24% together. The rest choose '1', or "very unlikely" and '5', or "very likely". From the data we gathered for this question, we found that the people have mixed feelings when it comes to preference for fast food. Therefore, we can conclude that they neither prefer or not when other types of food are involved.

3.3 Frequency



Pie Chart 5

The pie chart above shows us the average times of our respondents to eat fast food within the last month. We can observe that the majority of them (76 respondents) ordered about 1 to 3 times or they rarely order fast food. 20% of them choose to increase their fast food intake a little by ordering around 4 to 5 times within the last month. Lastly, only a small portion of our respondents have a big appetite for fast food by taking 7 until 12 times of fast food last month. We can conclude that most respondents are typically have being conservative about their health and eating less fast food.

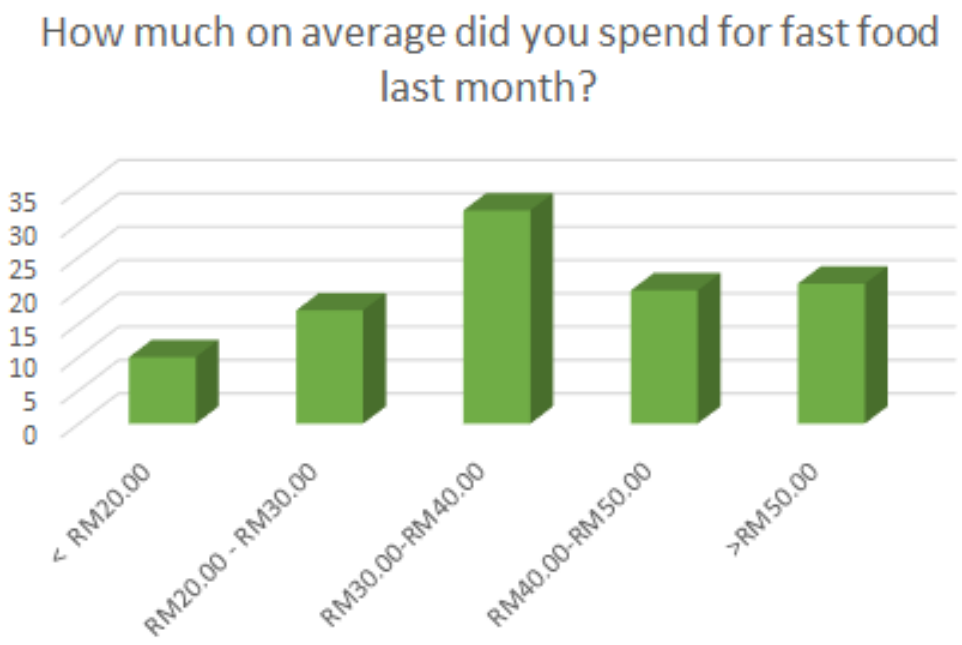


Diagram 6

Bar chart above resembles the analytical diagram of question 12 where we ask the respondents to state their average spending of their fast food intake last month. The highest response was that their average spending is about RM30.00 - RM40.00 which corresponds to about 32% (32 respondents). 21% of respondents (21 respondents) stated that they ended up purchasing more than RM50.00 worth of fast foods, 20% (20 respondents) spent RM40.00 - RM50.00 last month for fast food. Generally, only small groups are likely to buy cheaper and more affordable fast food items which makes up 27% of the total population. Conclusion from this bar chart is that respondents tend to spend more money on fast food with a minimum budget of RM30.00.

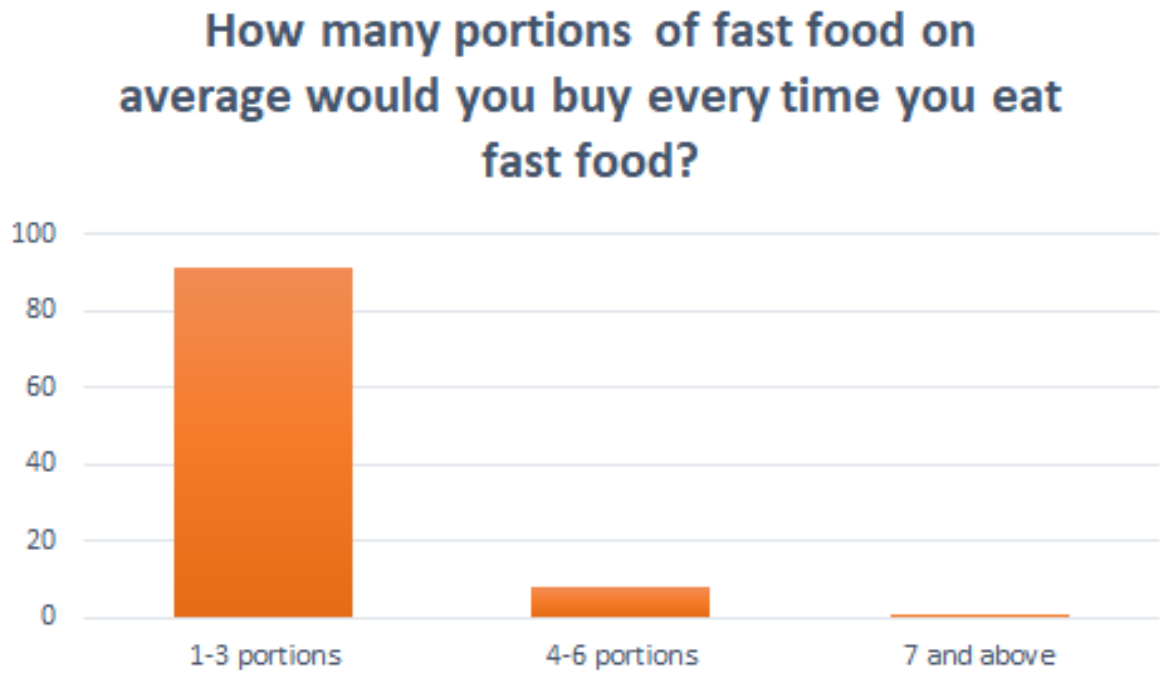
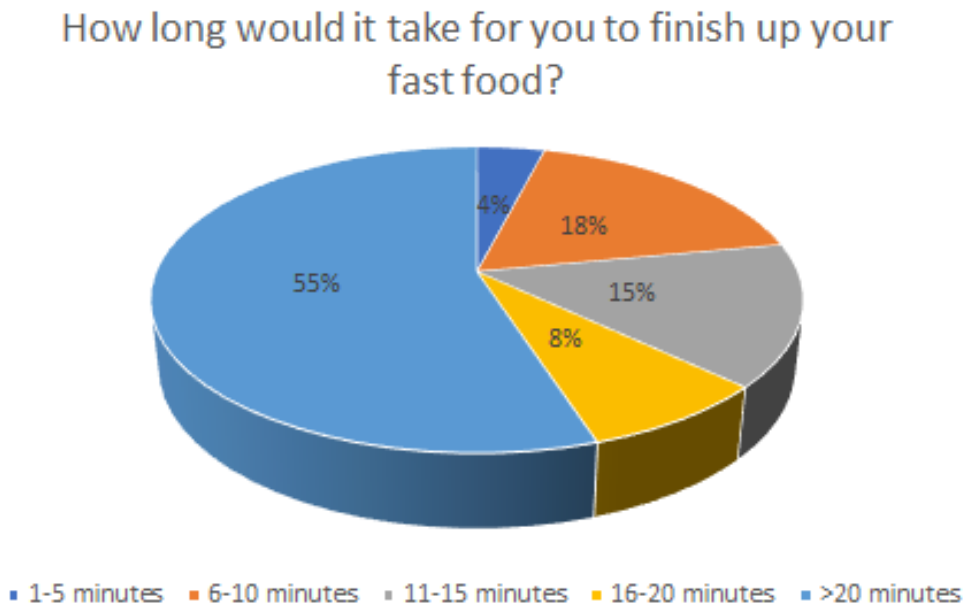


Diagram 7

This horizontal bar chart above demonstrates the answers given by respondents towards the question asked at number 13, the number of portions of fast food bought by respondents everytime they ordered at the fast foods. Almost immediately we can see the vast majority of our respondents tend to purchase between 1 - 3 items only when they're ordered at the fast food outlets, about 91% (91 respondents). 8% of respondents (8 respondents) took 4 - 6 portions of fast food while 1% (1 respondent) have the biggest appetite for fast food of all which took 7 and above fast food items. Conclusion, only a small minority of respondents have a bog fast food intake than others.



Pie Chart 6

Question 14 asks the respondents about their time taken to devour their fast foods. The above pie chart indicates the time taken for the respondents to finish eating their fast food. 4% of respondents (4 respondents) take at least 1 - 5 minutes to consume their fast food, 18% (18 respondent) eat for 6 - 10 minutes, 15 % (15 respondents) needs 11 - 15 minutes and 8% (8 respondents) take 16 - 20 minutes to eat their fast food. However, most respondents are satisfied with eating longer which is more than 20 minutes. Hence, eating longer makes respondents happier.

3.4 Awareness

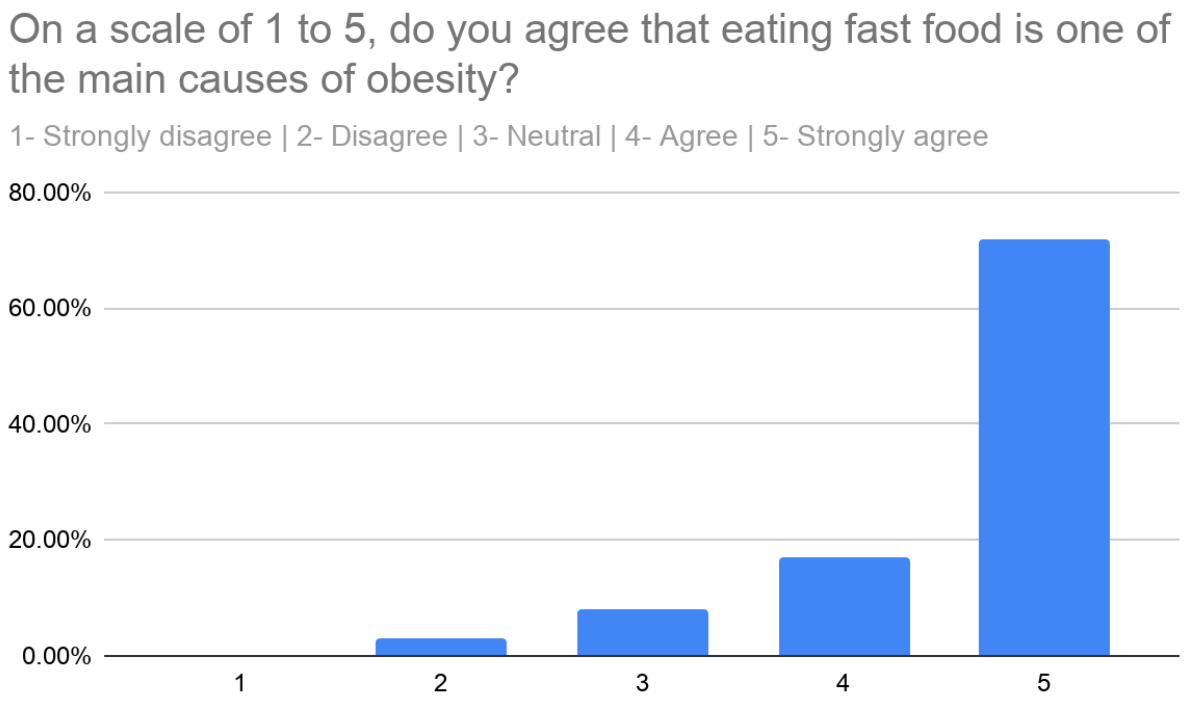


Diagram 8

Based on the above bar chart, respondents were asked about their opinion from scale 1, strongly disagree to scale 5, strongly agree on whether or not they agree that one of the main contributing factors to obesity is by eating fast food. The result shown above tells us no respondents strongly disagree, 3% disagree. However, the majority of the respondents (72%), strongly agree. While the idea is also being agreed by the other 17% of the respondents, 8% of them are being on the neutral side. Several studies including from Reidpath DD, Burns C, Garrard J, Mahoney M, Townsend M in 2002 found that in geographic areas where obesity currency and commonness is high, there are more fast food restaurants. Thus, it can be concluded that eating fast food is one of the main causes, if not the main causes, of obesity in Malaysia.

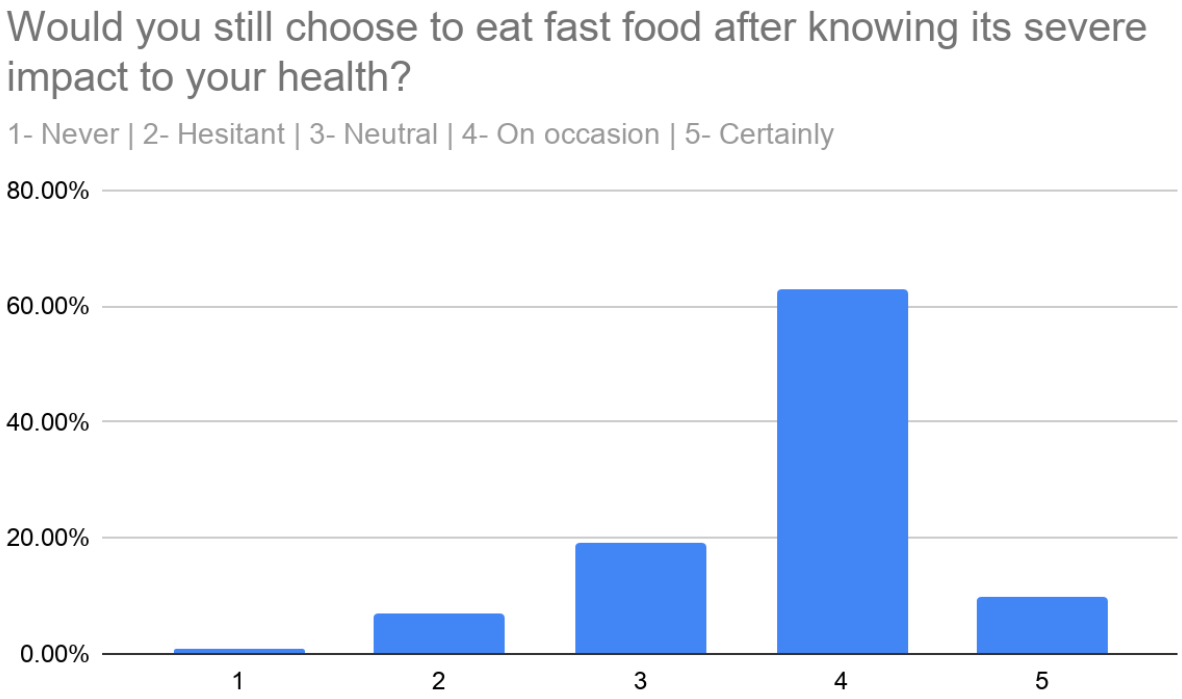
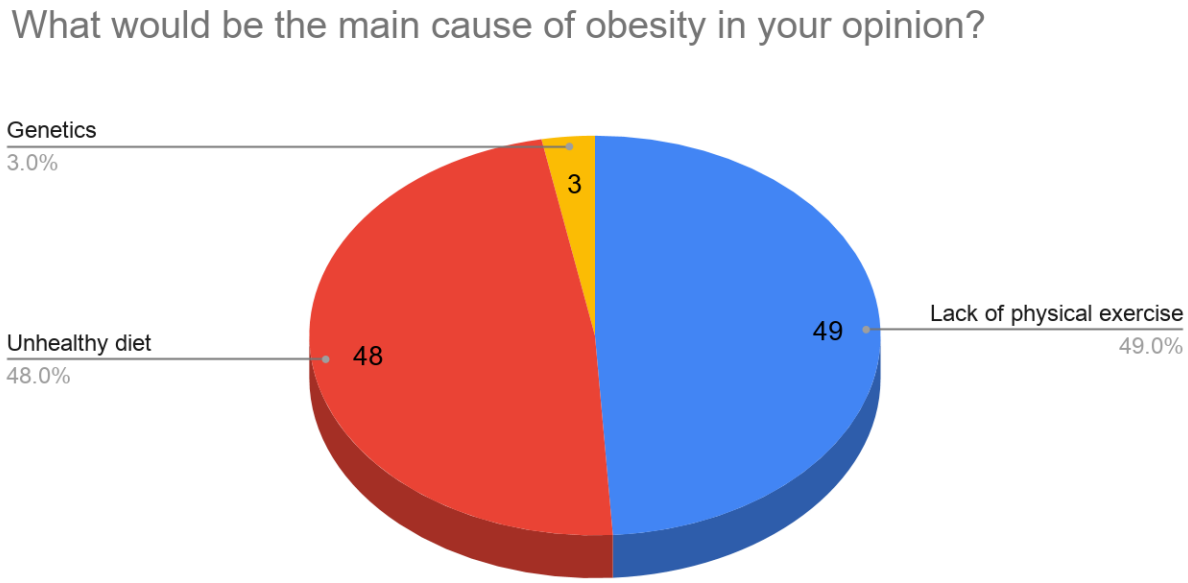


Diagram 9

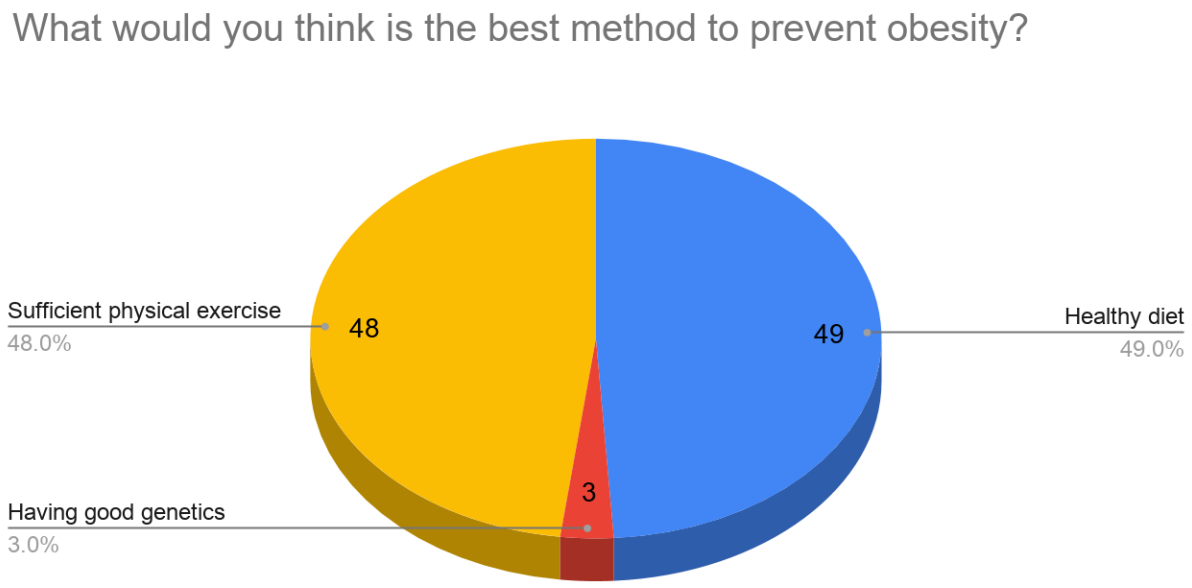
Based on the above bar chart, we get to know the verdict from the respondents after realising how fast food might impact their health and body weight. From scale 1, “never” to scale 5, “certainly”, would they still consume fast food after the realisation of the implication of eating fast food? It is a never or scale 1 for the minority, which is 1% of the respondents. However, 7% suggest that they will hesitate from consuming fast food. This can be a good idea because the majority of studies on this topic have concentrated on the connection between fast food consumption and weight gain, more regular consumption of meals cooked outside of the home has also been linked to an increased risk of insulin resistance, elevated total cholesterol and type 2 diabetes (Pereira MA, Kartashov AI, Ebbeling CB, 2005).

Majority of the respondents (63%) have chosen to still eat fast food on occasion, while 10% will become certain in their fast food intake. Lastly, the other fraction or 19% of the respondents are feeling neutral. In conclusion, we still believe that the majority of Malaysians still do not have the awareness about the bad effects from consuming fast food. Nevertheless, we believe such things happen based on factors such as accessibility, taste and time management.



Pie Chart 7

Based on the pie chart above, regarding respondents' opinions on the main cause of obesity, 49% of 100 total respondents chose lack of physical exercise as one of the main causes of obesity. It is not a secret that physical exercises such as jogging, running, swimming and cycling can help in body-calories burned. By practicing them, one's body can burn excess calories that are no longer needed by the body thus avoiding weight gain. However, only 1% less, or 48% respondents believed that an unhealthy diet may be the biggest factor of obesity. High total fat and sugar intake (Appelhans BM, 2013), high caloric intake (Garza KB, 2016) and low vegetables and fruits consumption (Dassen FCM, 2015) are three inclusions of unhealthy diet. Lastly, 3% respondents blamed genetics as the main cause of obesity. This is somehow, something arguable because as per R. J. F. Loos & C. Bouchard, people with high obesity genetic proneness will gain most weight as opposed to those who have the resistance towards obesity, considering factors such as lifestyle and environment.



Pie chart 8

Pie chart above discusses the best method of avoiding obesity. Majority or 49% of the respondents suggest that in order to prevent obesity, a healthy diet must be practiced in one's life. As mentioned in the previous pie chart, those are the three main aspects in a healthy diet. So, by obeying those three components, one can maintain their diet and most importantly ruling out obesity. Interestingly enough, not much less percentage of respondents (48%), suggest the idea of having sufficient physical exercise. Though a healthy diet is important, doing enough physical exercise is as important since it can help boost the process of weight loss. Lastly, there is also a suggestion of having good genetics from 3% of total respondents. However, we believe that this can help prevent obesity although it is completely out of men's control.

4.0 Conclusion

In this project, we have applied the knowledge and techniques of subject Probability and Statistic Data Analysis that we have already learned. We understand and implement four levels of data measurement which are nominal, ordinal, interval and ratio data. Besides that, we analyse, summarize, conclude and present data in graphical representations by using R Studio, Google Sheets and Microsoft Excel to ensure a clear and precise data is delivered. Not only that, we also learned on how to properly prepare a set of survey questions regarding our topic. It is also a fine experience to analyse and represent our own, real life data. This is essential to achieve the objective of this project which is to study how frequently, on average Malaysians consume fast food that may be the cause of obesity. From the analysis of data obtained in the survey, we have noticed that the frequency of Malaysians consuming fast food is still considerably high. This is because fast food is still a better choice in terms of ease of access as per majority in Question 4. However, we also found that Malaysians still tend to choose fast food even though they know how fast food might impact their health.

To wrap it up, we still think that there is still not enough awareness among Malaysians regarding the intake of fast food. Awareness can be raised by doing campaigns even from school level. This can be done by non-governmental organizations (NGOs), schools, parents and the Ministry of Health of Malaysia. We believe that this kind of effort may create a healthy lifestyle among Malaysians.

5.0 Reference

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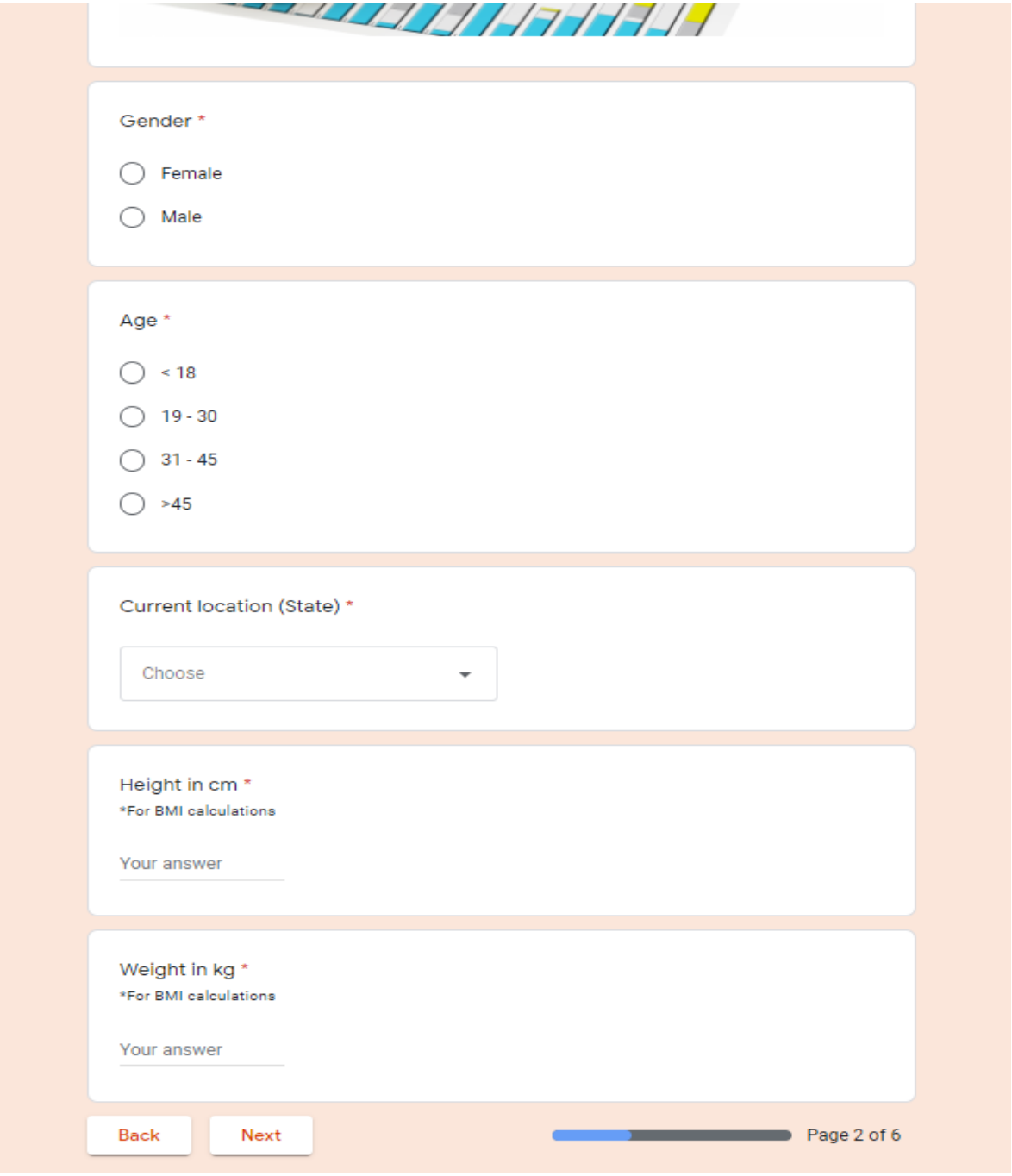
6.0 Appendix

https://docs.google.com/forms/d/e/1FAIpQLSeHFdCFtLbPaH1N4z_r-QynR6qw_91LVaTpVHr_DfNxYU8gpA/viewform



Appendix 1

On a scale of 1 to 5, how much do you like fast food? *
1- Strongly dislike | 2- Dislike | 3- Neutral | 4- Like | 5-Strongly like

	1	2	3	4	5	
Strongly dislike	○	○	○	○	○	Strongly like

What would be the reasons that people prefer fast food? *
*You can choose more than one answer

- [ ] They are quick
- [ ] Easy to get
- [ ] Tasty
- [ ] Inexpensive
- [ ] Too busy to cook

What type of fast food chain you would prefer? *

- ○ McDonald's
- ○ KFC
- ○ Burger King
- ○ Domino's Pizza
- ○ Pizza Hut
- ○ Other: _____

On a scale of 1 to 5, how accessible is it to get fast food around your area? *
1- Very unattainable | 2- Quite unattainable | 3- Neutral | 4- Attainable | 5- Very attainable

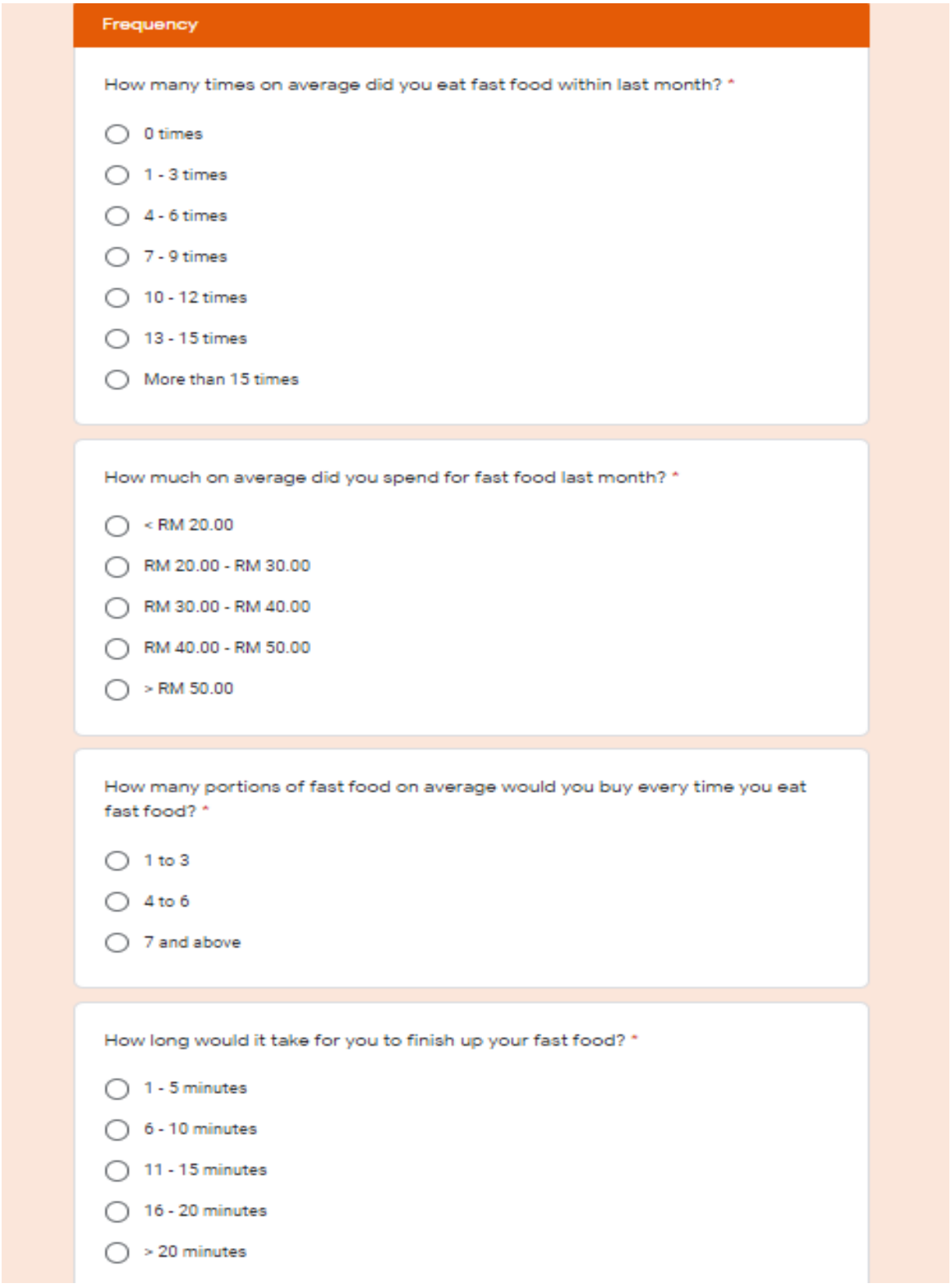
	1	2	3	4	5	
Unattainable	○	○	○	○	○	Easily Attainable

On a scale of 1 to 5, how likely would you prefer eating fast food compared to other types of food? *
1- Very unlikely | 2- Unlikely| 3- Neutral | 4- Likely| 5- Very likely

	1	2	3	4	5	
Very unlikely	○	○	○	○	○	Very likely

Back Next Page 3 of 6

Appendix 2



Frequency

How many times on average did you eat fast food within last month? *

- 0 times
- 1 - 3 times
- 4 - 6 times
- 7 - 9 times
- 10 - 12 times
- 13 - 15 times
- More than 15 times

How much on average did you spend for fast food last month? *

- < RM 20.00
- RM 20.00 - RM 30.00
- RM 30.00 - RM 40.00
- RM 40.00 - RM 50.00
- > RM 50.00

How many portions of fast food on average would you buy every time you eat fast food? *

- 1 to 3
- 4 to 6
- 7 and above

How long would it take for you to finish up your fast food? *

- 1 - 5 minutes
- 6 - 10 minutes
- 11 - 15 minutes
- 16 - 20 minutes
- > 20 minutes

Appendix 3

On a scale of 1 to 5, do you agree that eating fast food is one of the main causes of obesity? *

1- Strongly disagree | 2- Disagree | 3- Neutral | 4- Agree | 5- Strongly agree

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Would you still choose to eat fast food after knowing its severe impact to your health? *

1- Never | 2- Hesitant | 3- Neutral | 4- On occasion | 5- Certainly

	1	2	3	4	5	
Never	○	○	○	○	○	Certainly

What would be the main cause of obesity in your opinion? *

- ○ Unhealthy diet
- ○ Lack of physical exercise
- ○ Genetics
- ○ Other: _____

What would you think is the best method to prevent obesity? *

- ○ Healthy diet
- ○ Sufficient physical exercise
- ○ Having good genetics
- ○ Other: _____

Back Next Page 5 of 6

Appendix 4