



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING

Faculty of Engineering

SECI2143 – PROBABILITY & STATISTICAL DATA ANALYSIS

PROJECT 1

SECTION: 04 – 1SECR

GROUP: GP69

COURSE NAME: BACHELOR OF COMPUTER SCIENCE – NETWORK AND SYSTEM SECURITY

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1.0 Abstract

In our world and current generation, our population has increase exponentially since 1800. Our technology and medicine to combat illness have also improved significantly. This helps us combat the sickness that is present in our lifetime. But this doesn't mean we can just take it for granted as the medicine only reduces the chances of us dying to the sickness. In recent case, a new virus (COVID-19) has been discovered and it still has no known cure for it. For that we need to take care of our hygiene and increase our awareness towards this subject. In order to investigate the understanding of UTM students about the measures and good hygiene practices to protect themselves from gems and viruses, a study was conducted by us and 50 random respondents have completed a series of questions and their answer to the question were analyzed. The results show most of the sampled respondents know how to take care of their own personal hygiene and have considerable good hygiene awareness. For instance, they know about the social distancing with the others, wearing mask whenever going out into crowded places etc. We also found that most sampled respondents bought 0-50 pieces face mask whereas female bought more face mask than male. Besides, the relationship between face mask bought and face mask used is a proportional relationship.

2.0 Introduction

In our world today, people take their health and hygiene for granted because of the technology and medicine that the hospital can provide. With over 7.8 billion people living, it is easy to spread illness and diseases to other people easily without much effort. However, the people do not care much for it and how much it can affect our lifestyle of us and others.

Currently there is an outbreak of new coronavirus disease (COVID-19) which was first reported on 31 December 2019. The fast spreading of the virus also shows the health and hygiene awareness of people around the globe is not satisfying and don't took the virus outbreak seriously. Now the world is under the stress of taking care and finds a cure for this new disease caused by virus. As the saying goes better safe than sorry it is always better to prevent ourselves from getting the disease and takes all the precautions required and suggested. These measures or small little actions are crucial to prevent the further spread of this new disease as well.

Therefore, we decide to conduct a study on **Hygiene Awareness among UTM Students** on 15th March 2020. Our target sampled respondents are students from University Technology Malaysia (UTM). The purpose of this study is to look at how much does a person take care of their personal hygiene in an everyday life including during a pandemic situation and to get an insight about the cautiousness and concern of UTM students about global issues that is happening currently. This study takes into the account of how frequent they wash their hands, what precaution they take and how frequent they do it on avoiding transmitting germs. The later discussions follow order of **Methodology, Result and Discussion, Conclusion and Reflection.**

3.0 Methodology

The method that we used for this project is by conducting a series of questions through a survey via Google form which is primary data. We discussed about the series of question that we are going to use in the google form by seeing which question could have the best data to be analyzed.

Survey Targeted Respondent:

- UTM Students

Survey Form's Structure:

We have a total set of 17 questions that is divided into 2 sections.

- The first section is to get the basic information of the respondents which consists of gender, their year of study and faculty, what dorm they lived in and are they local or international students.
- The second section consists of question regarding our study on their hygiene. In order to reach our study's objectives, the question asked about the level of concern and awareness of the respondents' knowledge on hygiene and the amount of health product they have been bought by our respondents during this virus outbreak

We received a number of 50 people as our sample for this project. After we received their response to our questions, we used program called R Studio to help us plot the graph by using R language and give us a visual representation of our data and findings to the user's responses.

4.0 Result and Discussion

Our team has gathered 50 respondents via the survey form distributed in Google Form. The data are interpreted and analyzed using R-Studio and the result are as shown below:

Section 1: Respondent's Basic Information

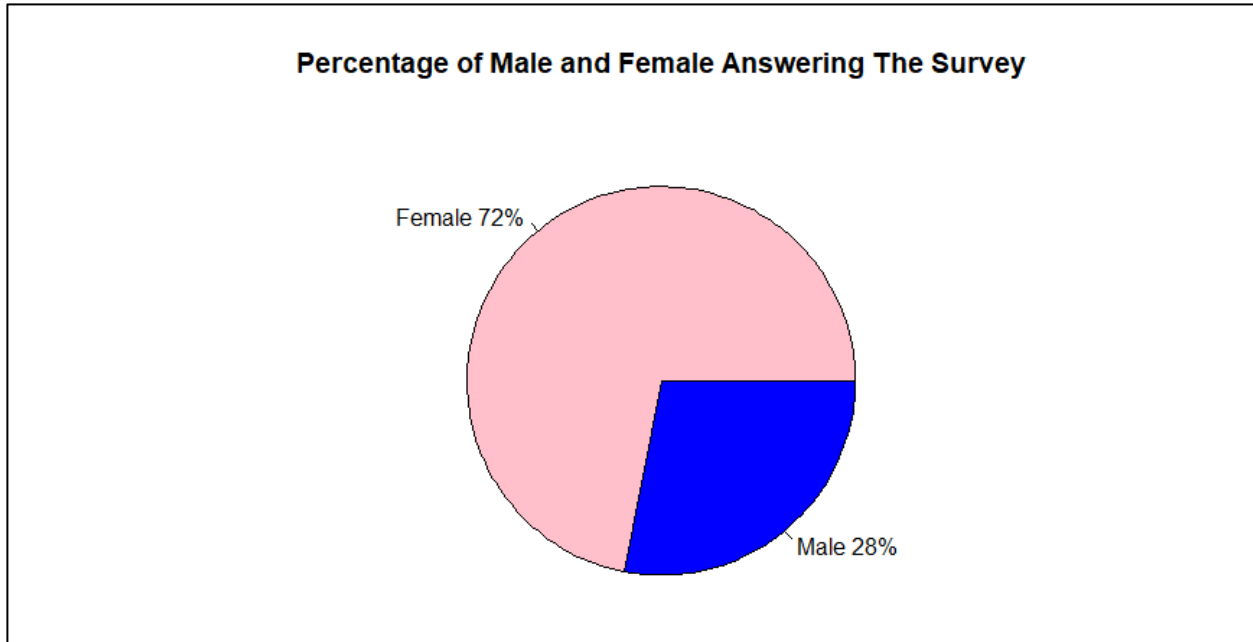


Figure 1: Percentage of Male and Female Answering the Survey.

The pie chart above portrays **the percentage of male and female answering the survey**. From there we can tell that 72% of our respondents (36 people) are female whereas 28% of the rest of the respondents are male (14 people). The difference between the amount of male and **female respondents** are quite significant as the difference between both genders is 22 people, which is 44%.

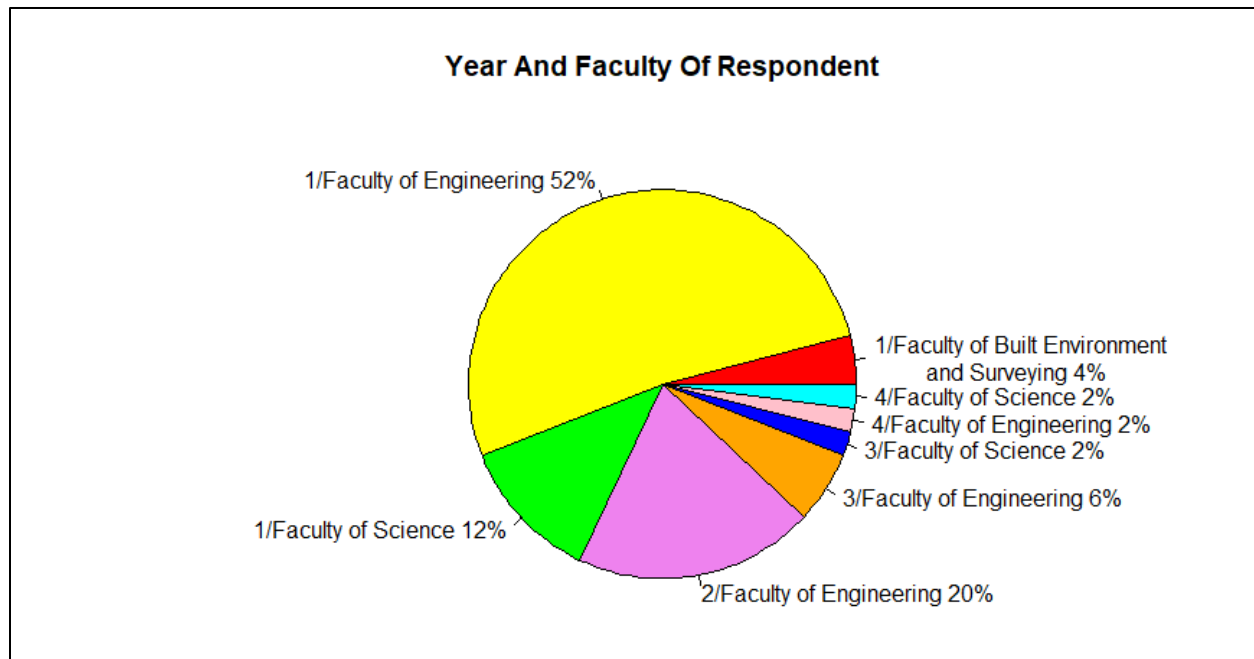


Figure 2: Year and Faculty of Respondent.

The pie chart above shows **the year of study and the faculty of our respondents**. It is obvious that the majority of the respondents are from 1st year Faculty of Engineering first year which have 26 out of 50 people (52%), followed by 2nd year Faculty of Engineering which have 10 respondents (20%), 1st year Faculty of Science 6 respondents (12%), 3rd year Faculty of Engineering 3 respondents (6%), 1st year Faculty of Built Environment and Surveying 2 respondents (4%) and last but not least 3rd year Faculty of Science, 4th year Faculty of Engineering and 4th year Faculty of Science each has 1 respondent (2%).

The respondents **mainly from Faculty of Engineering** are due to the reason that Faculty of Engineering has more School under it compare to other faculties. We can also concluded that the majority of the respondent age between

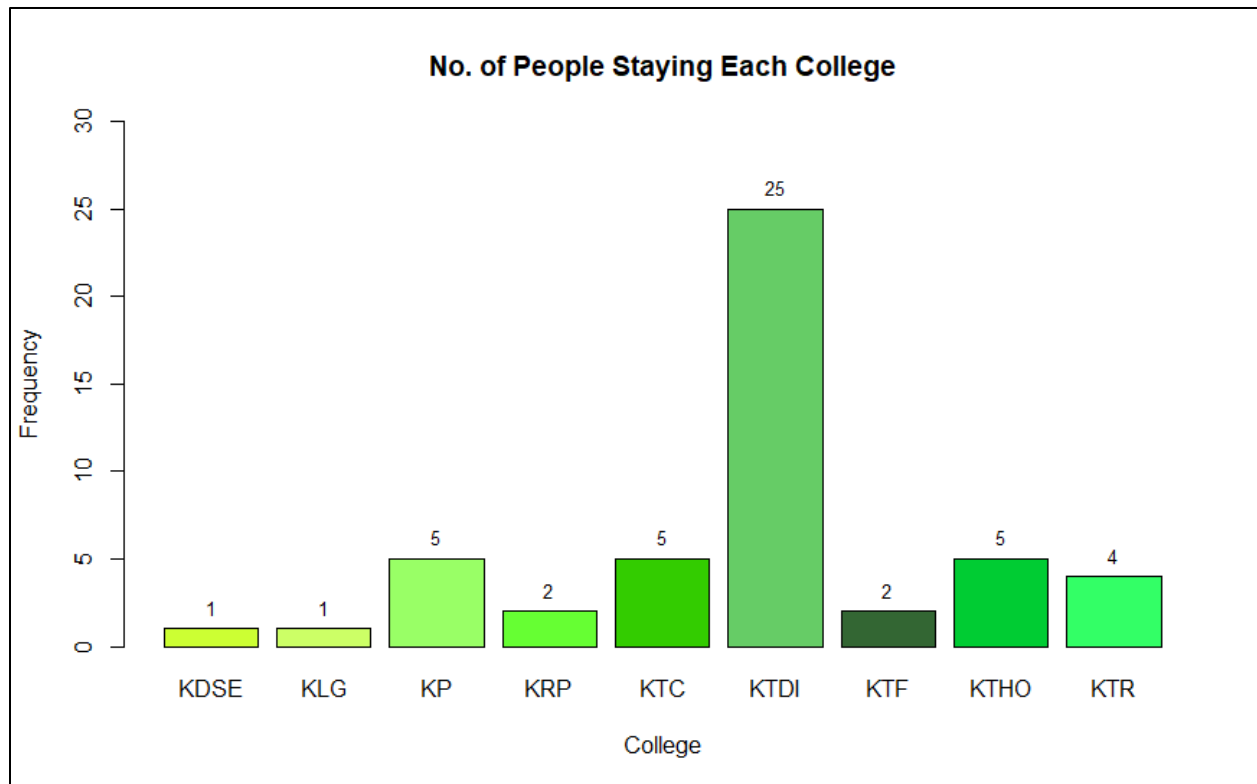


Figure 3: Number of people staying in each college.

Bar chart above shows **the college of the respondent staying**. Out of 50 respondents, 25 people (50%) are from **KTDI**, which has the highest percentage compared to other colleges; follow by KTHO, KTC and KP which have 5 people each. KRP and KTF both have 2 respondents while KDSE and KLG have 1 respondent.

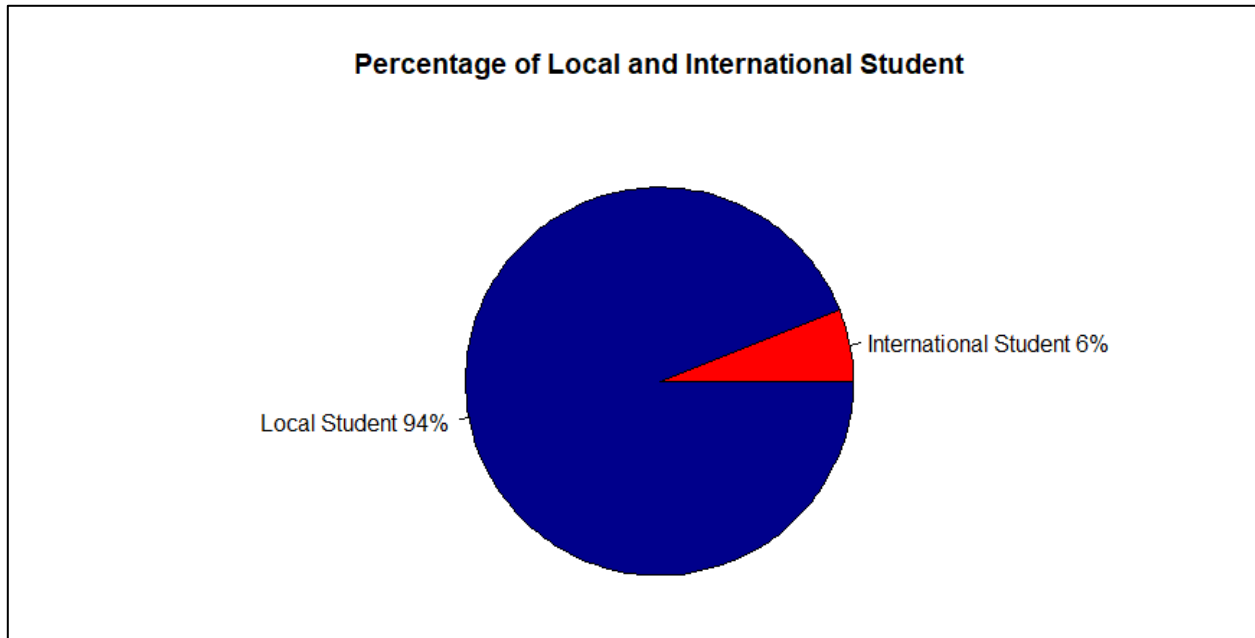


Figure 4: Percentage of local and international student.

Pie chart above shows the **percentage of local and international student** among the respondents. From the chart we can tell that a **huge majority of the respondents are local student**, which has 47 people (94%) whereas the international student has 3 people (6%).

Section 2: Respondent's Hygiene Awareness

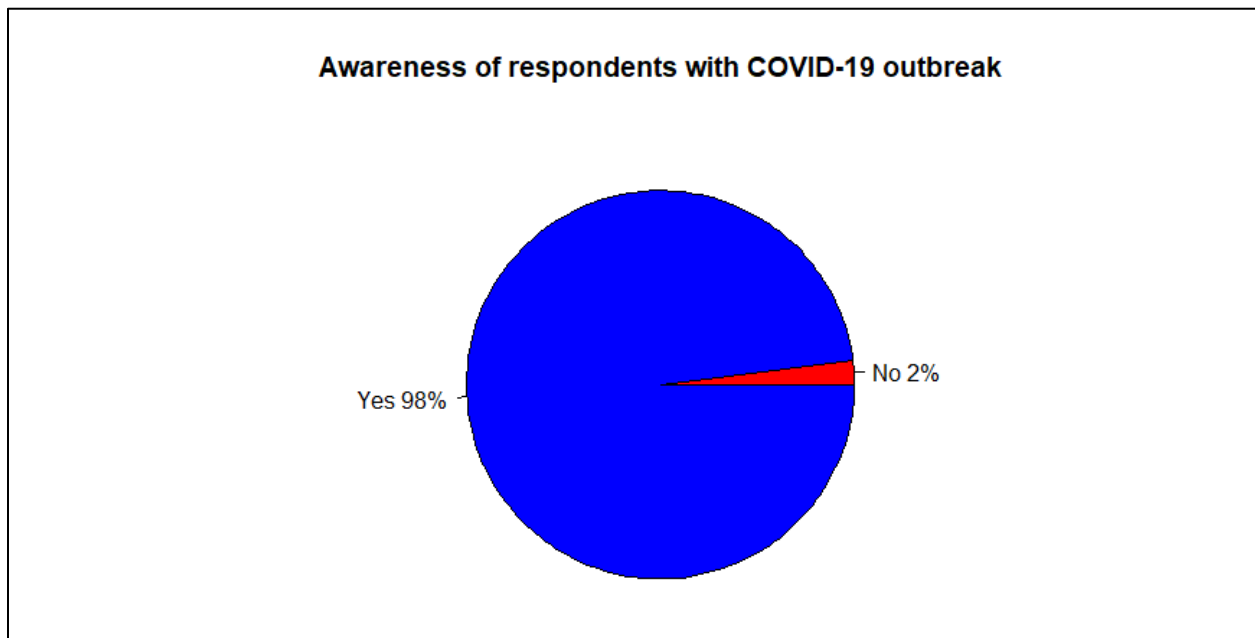


Figure 5: Awareness of respondents with the COVID-19 outbreak.

Pie chart above shows the **awareness of respondents with the COVID-19 outbreak**. A huge majority of the respondents which is 49 respondents (98%) answer “Yes” for the question while there is only 1 respondent (2%) answer “No”. It is safe to say that the **awareness of UTM students about the news regarding to health and hygiene is relatively high.**

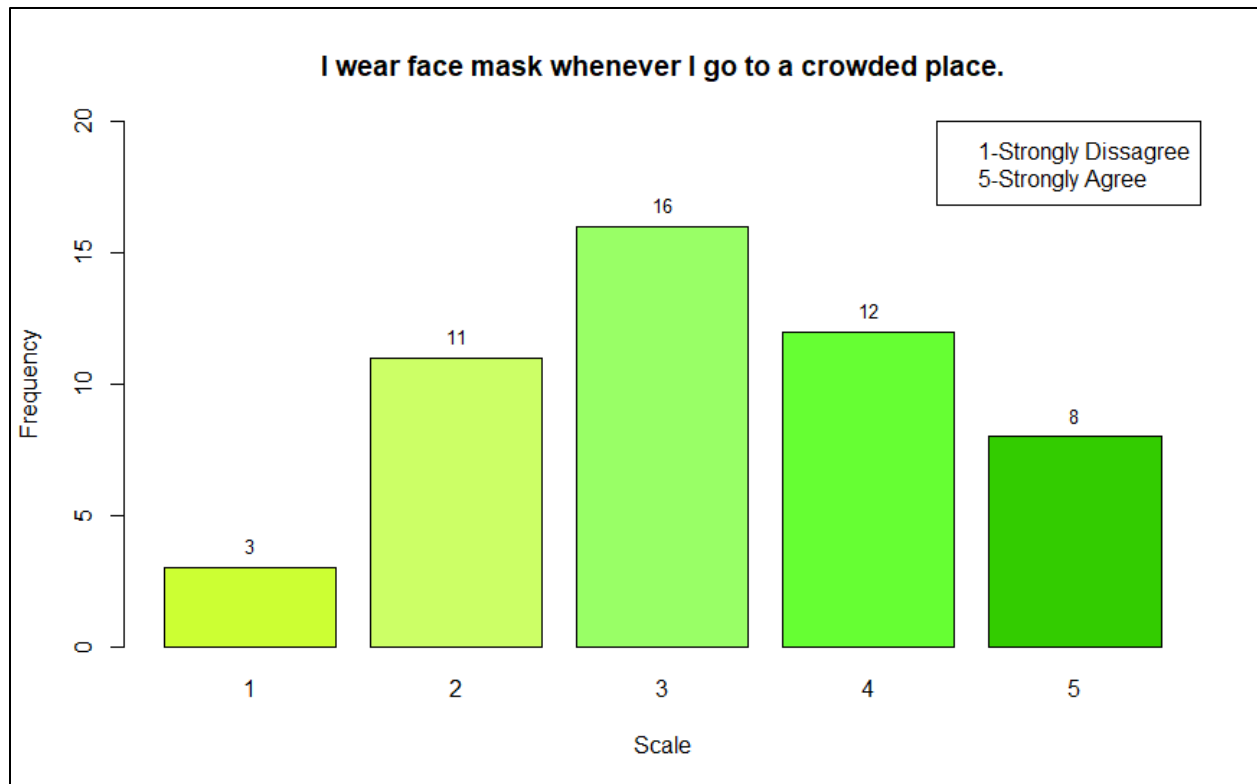


Figure 6: Scale on the topic “I wear face mask whenever I go to a crowded place”

In the figure above, 1 to 5 is a ratio scale where it means from “strongly disagree” to “strongly agree”. The respondents are required to rate themselves from the scale of 1-5 to the topic of “**I wear face mask whenever I go to a crowded place**”. From the data collected, there are 16 respondents (32 %) who choose to stay neutral to this topic, which they rated themselves to the scale of ‘3’. However, there are a total of 20 respondents (40 %) who rated themselves to the scale of ‘4’ and ‘5’, which represent the meaning of agreement. Thus, we can conclude that **most of the respondents wear face mask whenever they go to crowded place.**

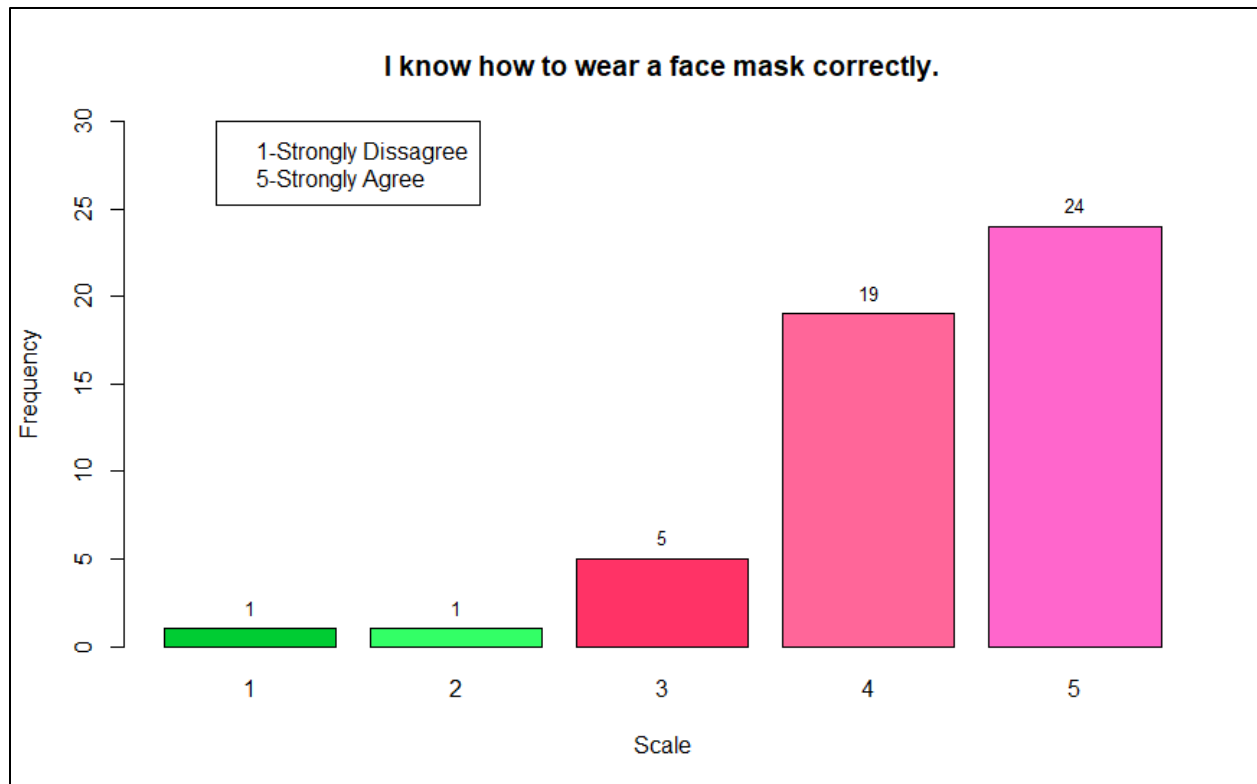


Figure 7: Level of agreement on the topic “I know how to wear a face mask correctly”

From the figure above, it is clearly shown that most of the respondents extremely agree that they know the way to wear a face mask correctly. 24 respondents rated themselves to the scale of ‘5’, which means strongly agree. The amount of respondents who chose the scale of ‘5’ is almost half from the total of respondents who react to this survey, which is about 48 % of them. Thus, we can make a conclusion that **majority of the respondents know how to wear a face mask correctly.**

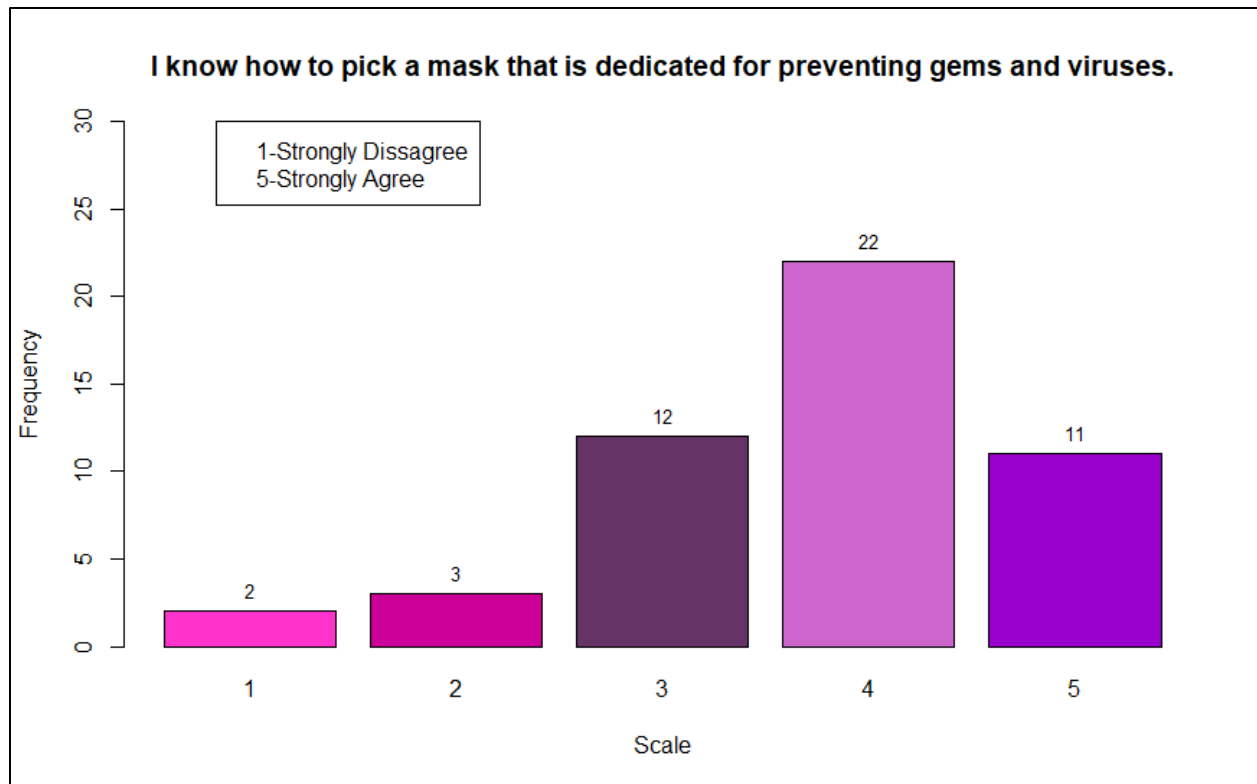


Figure 8: Scale on the topic “I know how to pick a mask that is dedicated for preventing gems and viruses”

From the figure above, it is discovered that out of 50 respondents, there are 22 respondents that rated themselves to the scale of ‘4’ on this topic. The number of respondents who chose the scale of ‘4’ is almost half from the total of respondents that filled up the survey form we had spread out, which is about 44 % of them. On the other hand, there are only 5 respondents who rated themselves to the scale of ‘1’ and ‘2’, which is only about 10 % from the total number of respondents. Accordingly, we can conclude that **most of the respondents are aware of the face mask which is dedicated for preventing gems and viruses.**

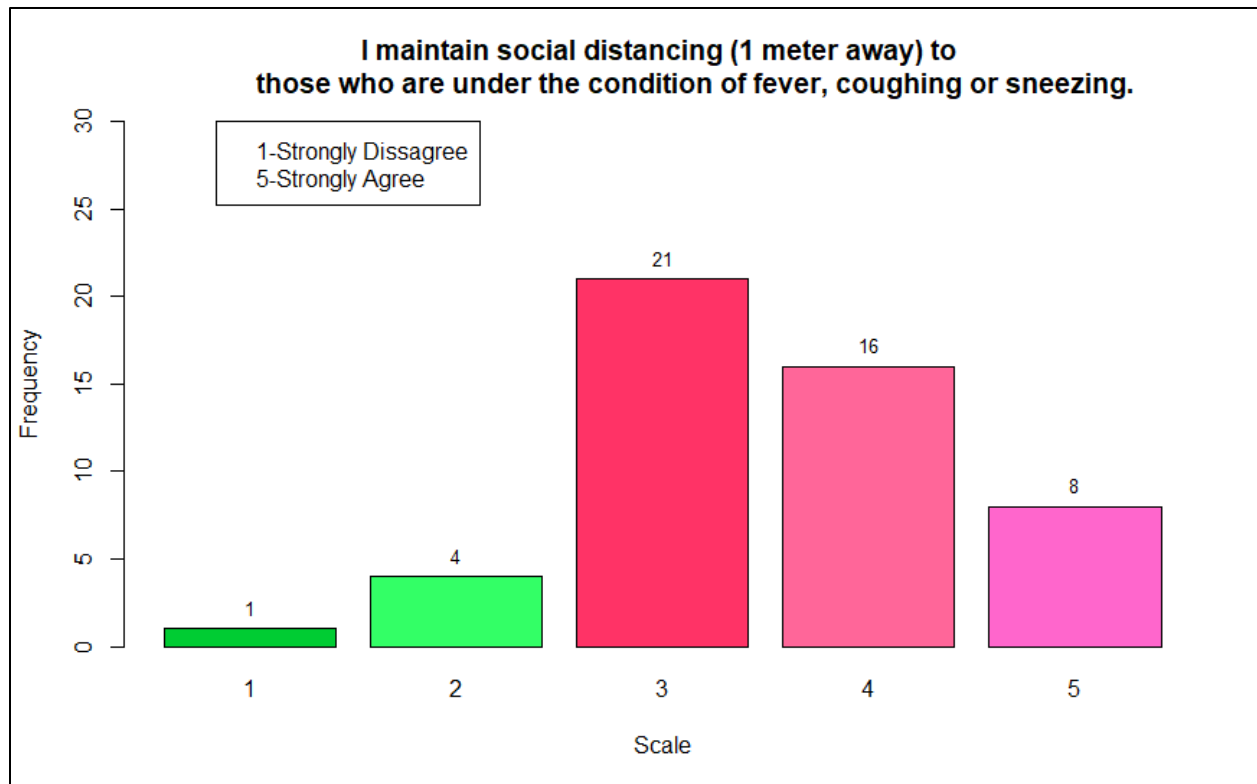


Figure 9: Level of agreement on the social distancing

The data for the level of agreement of 50 respondents was collected by giving a scale of 1(Strongly disagree) to 5(Strongly agree). From the figure above, it is obvious that most of the respondents practice social distancing to those who are under the condition of fever, coughing or sneezing as a total of 24 respondents (48 %) choosing the scale of ‘4’ and ‘5’, while only 5 respondents (10 %) choosing the scale of ‘1’ and ‘2’. Thus, we can make conclusion that **majority of the respondents practice social distancing to those who are in ill condition.**

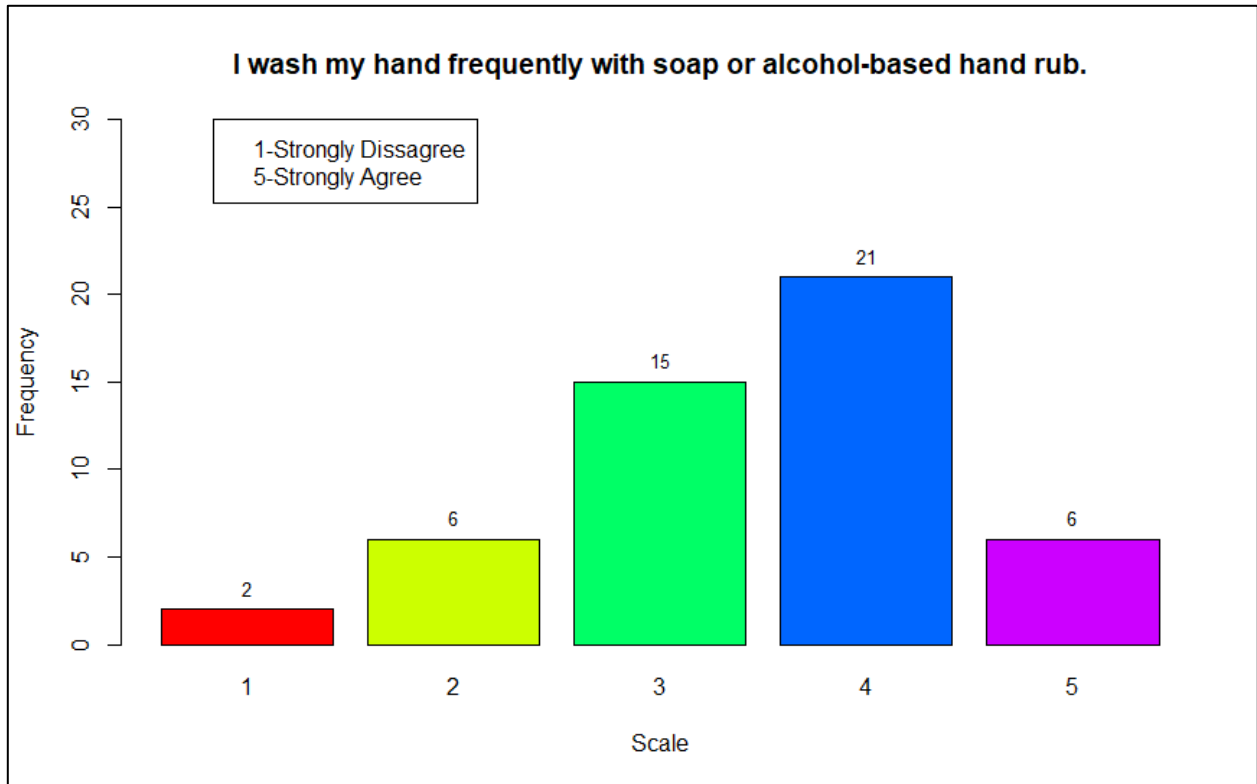


Figure 10: Scale on the topic “I wash my hand frequently with soap or alcohol-based hand rub”

The figure above shows the level of agreement of the respondents towards the topic “**I wash my hand frequently with soap or alcohol-based hand rub**”. From the figure above, we can clearly see that most respondents, which are about 21 respondents, rated themselves to the scale of ‘4’, which has the meaning of agreement. Therefore, it can be concluded that **most respondents will wash their hand with soap or alcohol-based hand rub frequently** so that they won’t be exposed to huge amount of bacteria and virus and get ill easily.



Figure 11: Scale of the adherence of respondents in following the rules of washing hand

The figure above shows the level of agreement of respondents towards the topic “**I follow the rules of washing hand every time I wash my hand**”, where scale ‘1’ represent “Strongly Disagree” and scale ‘5’ represent “Strongly Agree”. As the scale increases from ‘1’ to ‘5’, the level of agreement also increases. From the answers from 50 respondents that we have collected, we can make a conclusion that **most of the respondents are on the neutral side as 25 respondents** (50%) choose the scale ‘3’, which is on the middle of the scales that we have prepared. And, only a few respondents are not agreeing with this topic.

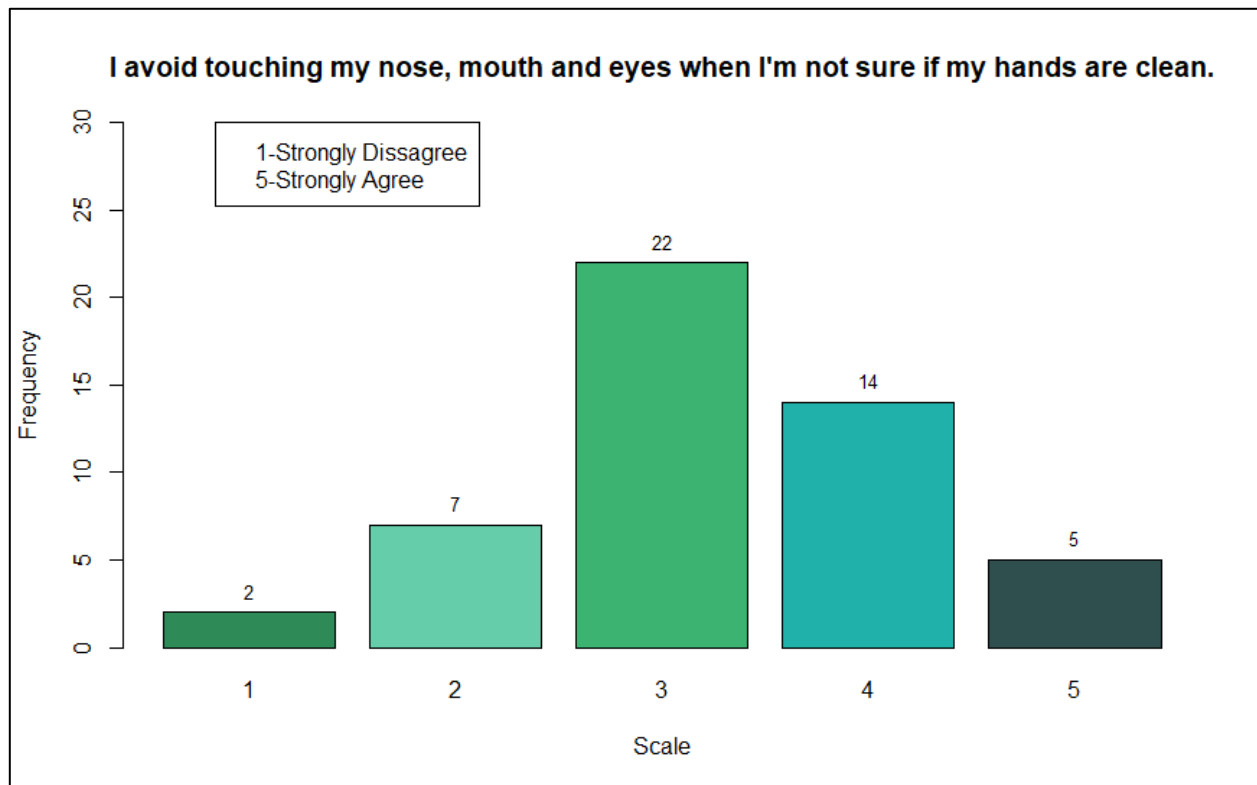


Figure 12: Scale of the adherence of respondents in avoiding touching nose, mouth and eyes when it is uncertain that the hands are clean

From the bar chart above, 22 respondents are on the neutral position, which they neither agree nor disagree that they avoid touching their eyes, nose and mouth when they are uncertain if their hands are clean. A total of 9 respondents respond to the scale of ‘1’ and ‘2’ which have the meaning of disagreement, while a total of 19 respondents rated themselves to the scale of ‘4’ and ‘5’ which have the meaning of agreement. Thus, from the data we collected from the respondents, we can conclude that **only minority of the respondents**, that is about 18 % from the total of respondents is unaware of their self-hygiene, as they **do not purposely avoid touching their eyes, nose and mouth when they are not sure if their hands are clean.**

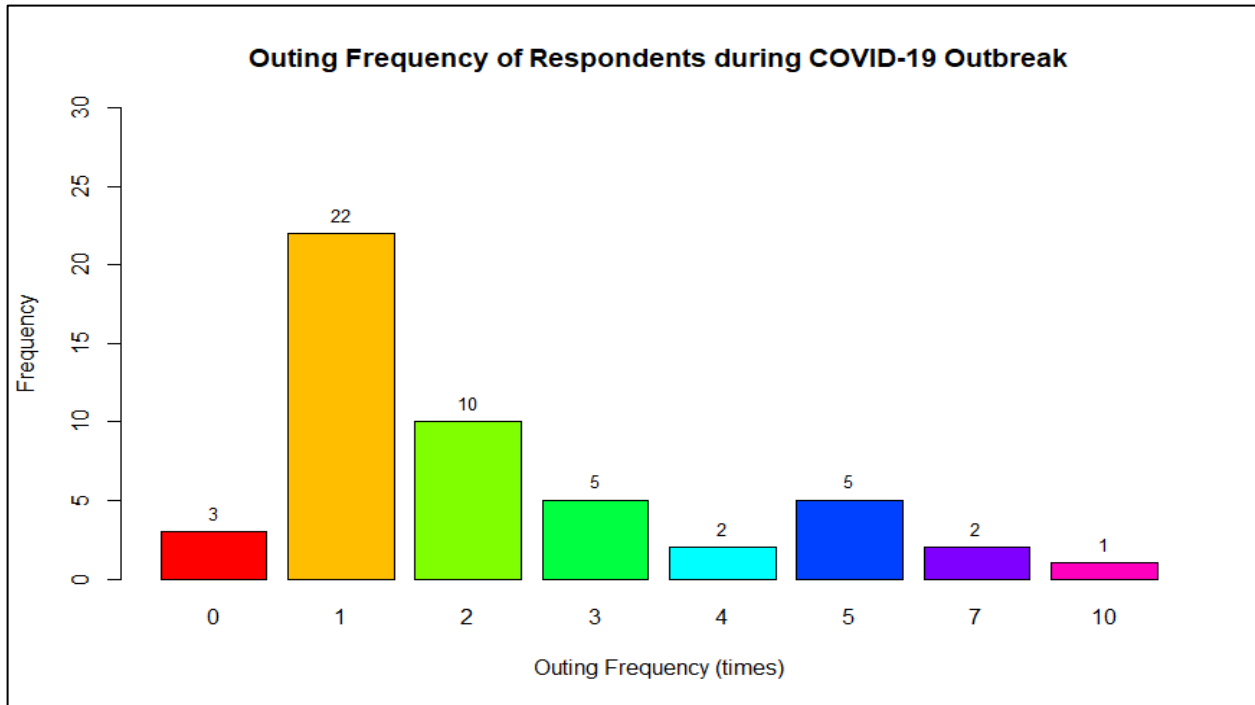


Figure 13: Outing Frequency of Respondents during COVID-19 Outbreak

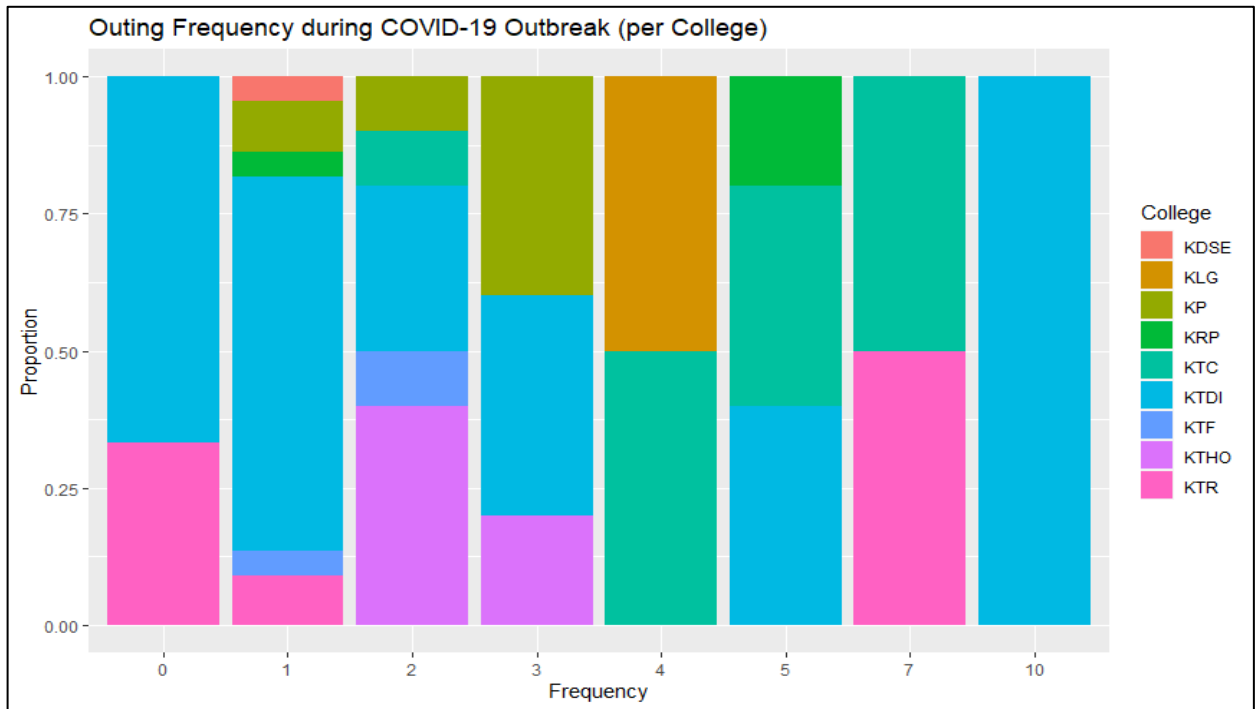


Figure 14: Outing Frequency of Respondents from Different College

The bar charts above show the **respondents' outing frequency and its relationship with respondents' college** respectively. There are 3 respondents (6%) do not go outing during COVID-19 outbreak, 1 respondent from KTR and 2 respondents from KTDI. However, 1 respondent (2%) from KTDI went outing 10 times during this disease outbreak. The **median** of outing frequency is 1.5 and the **mean** is 2.28 while the **mode** is 1. The **standard deviation** is 2.0308. We can conclude that **most UTM students go out 1 to 2 times during the COVID-19 outbreak and the students from KTDI go out the most based on the data.**

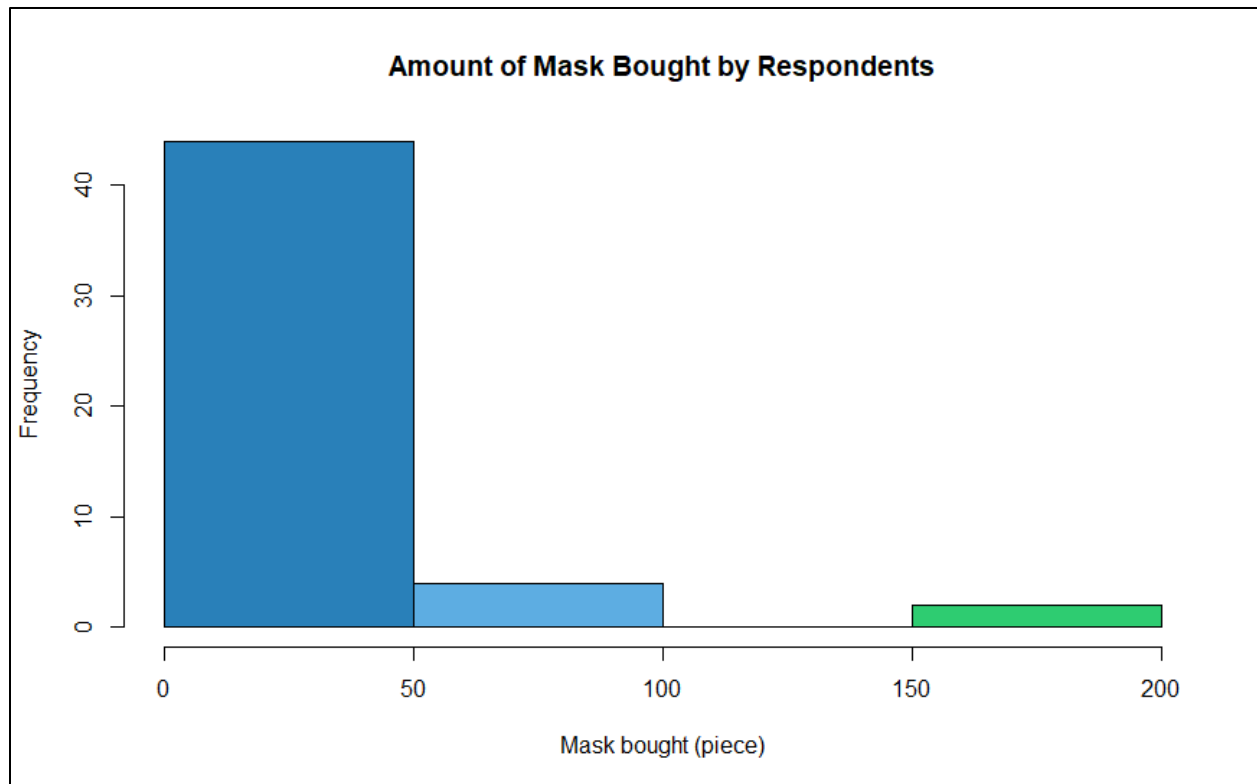


Figure 15: The mask bought by respondents

The histogram shows that the **number of masks bought by respondents so far**. There are about 44 respondents (88%) bought the number of masks in between 0 piece and 50 pieces, 4 respondents (8%) bought the masks in between 50 pieces and 100 pieces and there are 2 respondents (4%) in the category of 150-200 pieces of masks. Hence, we can conclude that **most of the respondents bought the masks are equal to or less than 50 pieces** maybe because of the shortage of the masks.

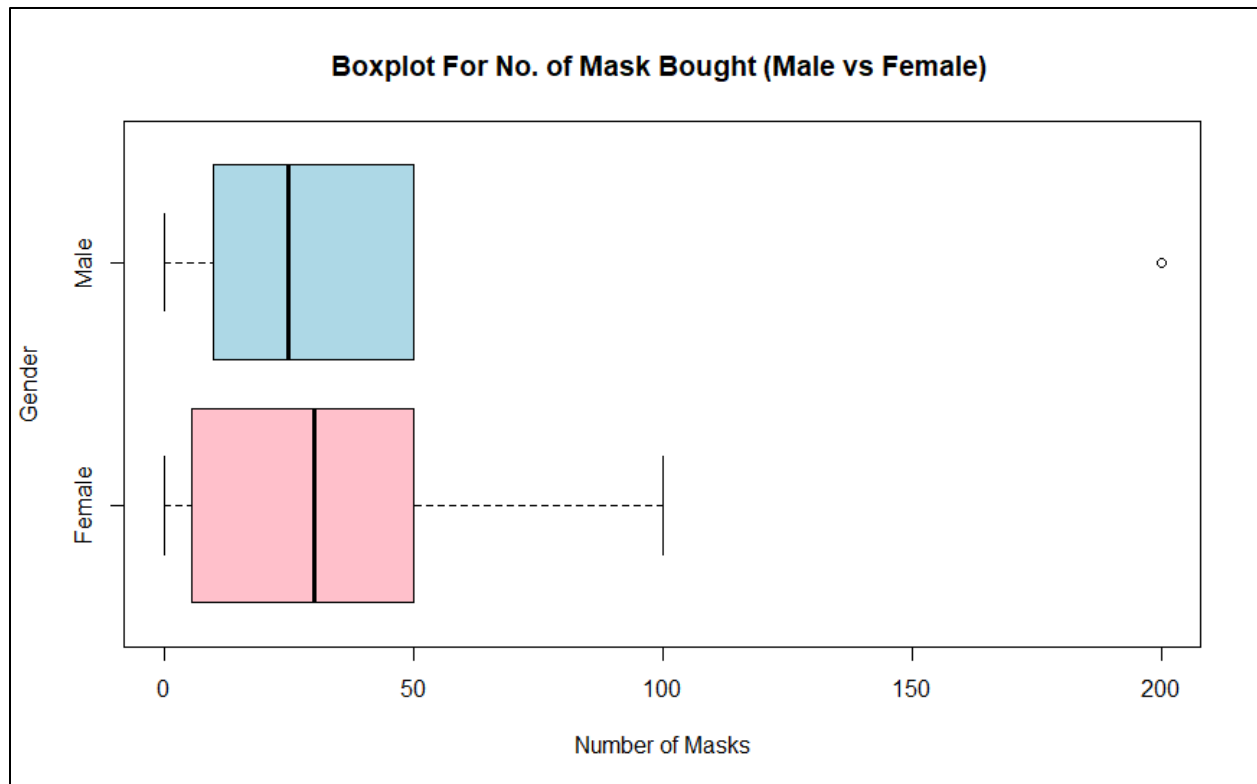


Figure 16: The number of masks bought by female vs male

From the box plot, the **first quartile (Q1)** of the number of masks bought by female is 5 and male is 10. Both female and male share the same value of the **third quartile (Q3)** which is 50. We can see that the number of masks bought by the female (30) has higher **median** than the male (25). However, the highest number bought by the male, 200 pieces is twice the amount of the highest number of masks bought by the girls which is 100 pieces. Median is the most suitable method to use in this graph because the data contains outliers (200) and using the median will not be affected by the outliers. Therefore, we can say that **female bought more mask than male**.

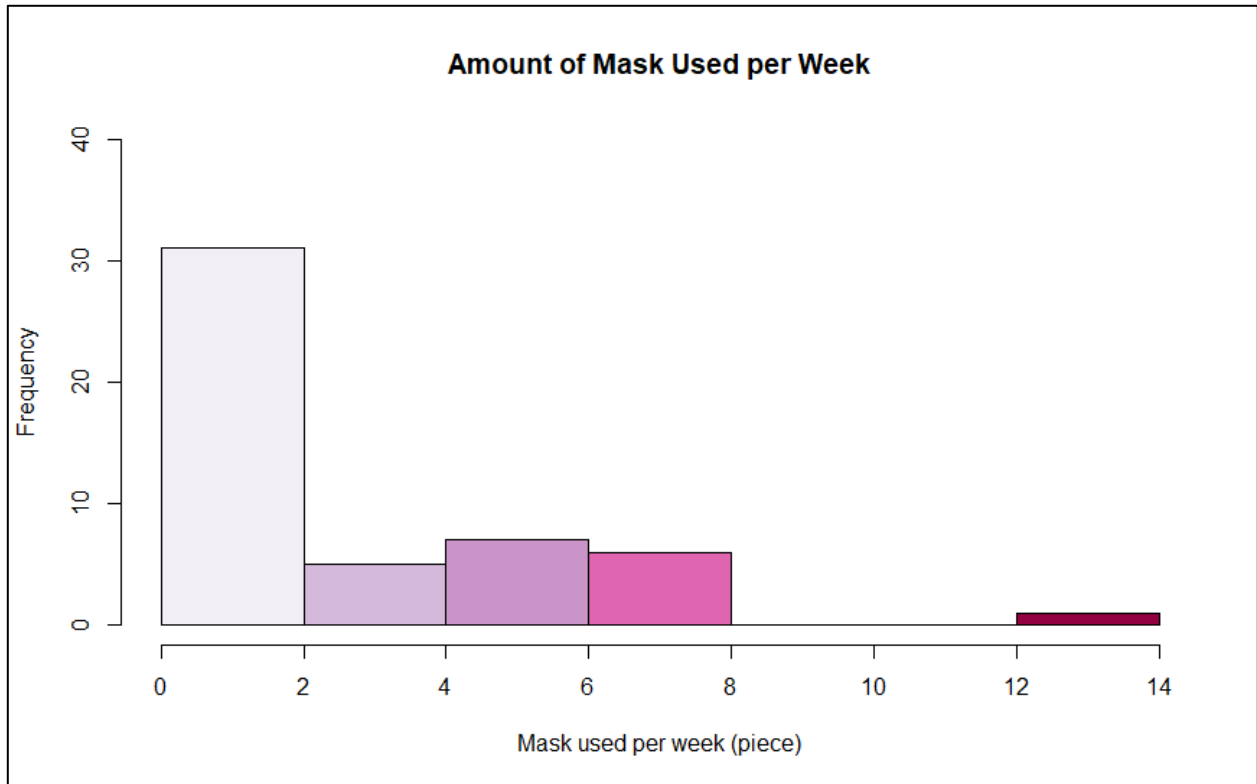


Figure 17: Amount of mask used per week.

The histogram above shows the **amount of mask used by the respondents per week**. There are 31 respondents who use 0-2 masks per week, which has the highest amount, followed by 5 respondents use 3-4 masks per week, 7 respondents use 5-6 masks per week, 6 respondents use 7-8 masks per week and last but not least 1 respondent use 13-14 masks per week. Thus, we can conclude that **majority of the sampled respondents use 0-2 masks per week** maybe due to the amount of times they went outing where mostly went out 1 time per week.

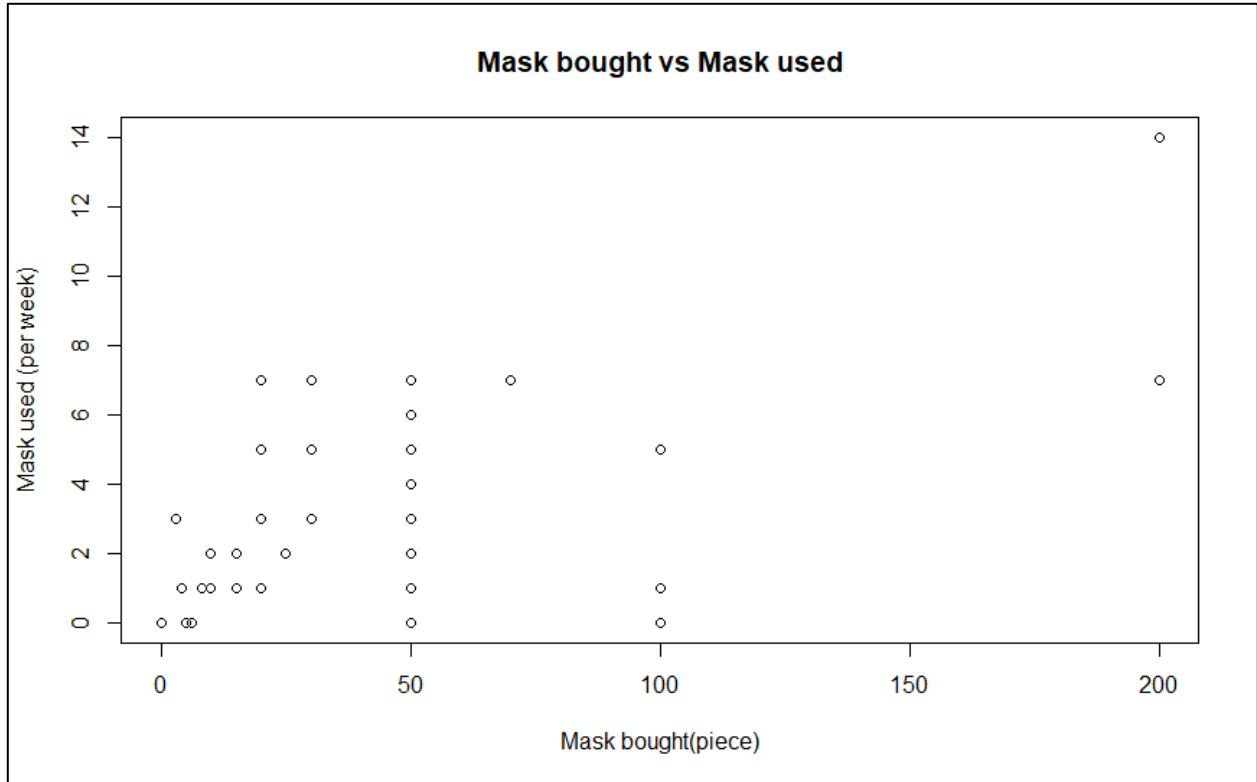


Figure 18: The mask bought vs the mask used

This scatter plot shows **the mask bought vs used by the respondents**. From the graph, we can see that the mask used per week is affected by the mask bought by the respondents. The more masks the respondents bought, the more masks the respondents used per week. This phenomenon is most obvious in mask bought between 0-50. In conclusion, the **relationship between mask bought and mask used is positively proportional** in which the number of masks bought by the respondents increases, the masks used by the respondents increases. This also means that the respondents used the masks they bought and not only bought and store it.

The decimal point is at the |

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0 | 00000000000000
1 | 000000000000000000
2 | 00000000000
3 | 00
4 | 00
5 | 0000
6 |
7 |
8 |
9 |
10 | 00

```

Key: 1 | 0 = 1

Figure 19: Hand Sanitizer Bought by Respondents

The stem and leaf plot above shows **the amount of hand sanitizer bought by the respondents so far**. The stem is the total amount hand sanitizer bought by the respondents and the leaf stands for the number of respondents bought the hand sanitizer. From the figure above, there are 13 respondents (26%) did not buy any hand sanitizer, 17 respondents (34%) bought 1 hand sanitizer ,10 respondents (20%) bought 2 hand sanitizers and 4 respondents (8%) bought 5 hand sanitizers. 3,4 and 10 bottle of hand sanitizers had the same number of buyers which are 2 respondents (4%). The **mode** and **median** are the same which is 1 whereas the **mean** is 1.82. Hence, we can make a conclusion that **most of respondents bought 1-2 bottles of hand sanitizers**.

	Sanitizer used by Respondents per day (times)	Frequency	Relative Frequency	Cumulative Frequency	Relative Cumuative Frequency
1	0-2	34	0.68	34	0.68
2	2-4	10	0.20	44	0.88
3	4-6	3	0.06	47	0.94
4	6-8	2	0.04	49	0.98
5	8-10	1	0.02	50	1.00

Table 1: Amount of hand sanitizer used per day (times)

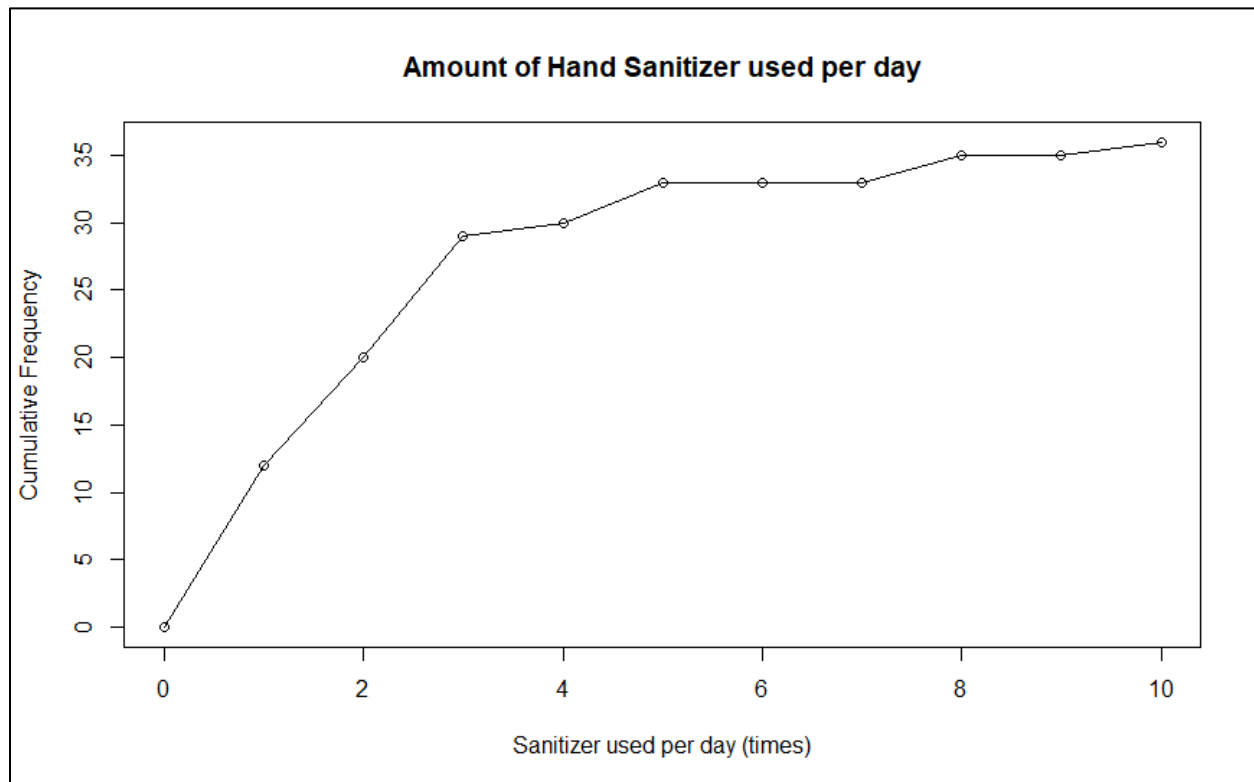


Figure 20: Amount of hand sanitizer used per day (times).

This cumulative frequency graph shows that **the amount of hand sanitizer used by respondents per day during the Covid-19 outbreak.** There are 14 respondents (28%) did not use the hand sanitizer because they did not buy the hand sanitizer and the rest (72%) used at least 1 time per day. The highest amount of hand sanitizer used by a respondent is 10 times per day. From the graph, we can conclude that a big porpotion of respondents use the hand sanitizer 0-2 times per day.

5.0 Conclusion

In conclusion, the students of UTM have considerable high hygiene awareness and know the right things to do during the COVID-19 outbreak. They also only bought a moderate amount of health supplies like face mask and hand sanitizer so that others still stand a chance to buy some for themselves too. This period is tough but if everyone is doing their parts, we believe that the virus outbreak will be soon over fairly quickly.

6.0 Reflection

The data from this survey is collected from a random sample of people consisting of students of UTM. The respondents are mostly from local students of Faculty of Engineering who lives in KTDI which may cause the data to be biased. The proportion of them is just too significant that the data are more biased towards them even though it was a random sample. Ways to avoid this is to publish the survey on more platforms and Whatsapp group that consist of people from different faculty.

7.0 Reference

1. Lecturer's note Chapter 1: Introduction and Data Analysis
2. Lecturer's note Chapter 2: Data Description
3. Lecturer's note Chapter 3: Descriptive Statistics
4. Lecturer's note Introduction to R (Descriptive Statistics)
5. World Population, <https://www.worldometers.info/world-population/> ; Last surveyed on 25th March 2020.
6. Coronavirus, https://www.who.int/health-topics/coronavirus#tab=tab_1; Last surveyed on 25th March 2020.

8.0 Appendix

Google Form

Hygiene Awareness Among UTM Students

Greetings! We are Computer Network and Security students. This google form was created for conducting a survey for Probability and Statistical Data Analysis's Project 1. We would like to collect data in order to investigate the understanding of UTM students about the measures and good hygiene practices to protect themselves from germs and viruses. Currently there is an outbreak of new coronavirus disease (COVID-19) which was first reported on 31 December 2019. Now the world is under the stress of taking care and finds a cure for this new disease caused by virus. As the saying goes better safe than sorry it is always better to prevent ourselves from getting the disease and takes all the precautions required and suggested. These measures or small little actions are crucial to prevent the further spread of this new disease as well.

The objectives are to know how far would UTM students go to protect themselves from germs and viruses and to get an insight about the cautiousness and concern of UTM students about global issues that is happening currently. Thank you for taking your time and fill up this form.

* Required

Section 1: Respondent's Basic Infos

Gender *

Female

Male

Year of Study/Faculty *
Example: 1/Faculty of Engineering

Your answer: _____

Where do you stay? (example : KTDI) *
Answer "Outside" if doesn't stay inside any UTM colleges.

Your answer: _____

Are you a local student or an international student?

Local Student

International Student

Section 2: Respondent's hygiene awareness

Have you been aware and keep up with the latest news regarding the Coronavirus outbreak? *

Yes

No

I wear face mask whenever I go to a crowded place. *

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I know how to wear a face mask correctly. *

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I maintain social distancing (1 meter away) to those who are under the condition of fever, coughing or sneezing. *

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I know how to pick a mask that is dedicated for preventing germs and viruses. *

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I wash my hand frequently with soap or alcohol-based hand rub. *

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

I follow the rules of washing hand every time I wash my hand. *

1 2 3 4 5

Strongly Disagree Strongly Agree

I avoid touching my nose, mouth and eyes when I'm not sure if my hands are clean. *

1 2 3 4 5

Strongly Disagree Strongly Agree

How many times do you go out to crowded place per week during the outbreak? *

Your answer

How many masks (in piece) have you bought so far? *

Your answer

How many masks do you use per week? *

Your answer

How many hand sanitizer have you bought so far? *

Your answer

How many times do you use hand sanitizer per day? *

Your answer

Submit

Page 1 of 1