SCHOOL OF COMPUTING
Faculty of Engineering

SEMESTER 2

SESSION 2019/2020

SECI2143

PROJECT 1

PREPARED BY :

1. NUR ALEEYA SYAKILA BINTI MUHAMAD SUBIAN (A19EC0127)
2. NOR HAFIYZHA BINTI MD HUSNI (A19EC0124)
3. NUR HADIRAH MUNAWARAH BINTI ROZMIZAN (A19EC0201)
4. AZRIANA BINTI ZAINAL ABIDIN (A19EC0027)

LECTURER'S NAME: DR. CHAN WENG HOWE
SECTION : 02
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ABSTRACT

We were given a task to conduct a survey on certain issues or topics within UTM. Our chosen topic to focus on is UTM Students' transportation as we want to study the statistics of students using transportation in UTM.

INTRODUCTION

In this case study, we want to study the statistics of students using transportation in UTM. There are several ways for students to move from one place to another in UTM which are car, bus, motorcycle, bicycle, e-hailing and walking. The purpose of this study is to measure the preference of transportation by students. Besides that , we also focus on student's satisfaction and preference towards the ways of transportation and its service quality attributes.

OBJECTIVES

- Determine the time taken by students to wait for the transportation.
- Determine rating of students towards their preference of transportation.
- Determine the prefered spot in UTM by the students.

METHODOLOGY

First and foremost, we've taken 50 students from the School of Computing as our sample for our case study. We've decided to collect the data by using a survey (Smart Survey/Master Survey) in order to spread and share our survey conveniently. This is because students were often using web messaging applications such as Email and WhatsApp instead of being interviewed directly. In order to get a bunch of data within the meantime, we decided to blast our survey through WhatsApp group. Collecting our data by using surveys shows that our data is a primary data type where the data originally originates from the students who filled our survey. We also used R software to display the data that have been collected.

Student Survey on Transportation in UTM

1. Student Details

1. Your Gender? *

- Male
- Female

2. Which year are you? *

- 1
- 2
- 3
- 4

3. Your programme? *

- SCSP/SECP
- SCSR/SECR
- SCSB/SECB
- SCSJ/SECJ
- SCSV/SECV

4. What kind of transportation did you use frequently? *

- Walking
- Bus
- Car
- Motorcycle
- E-hailing (Grab / Maxim)
- Bicycle

5. What is your favourite spot to go around UTM? *

- Cafe
- Mosque
- Pasar Malam
- Library
- Faculty
- Other (please specify):

6. Based on your chosen transport, what is the level of difficulties to get the transport ? *

- Easy
- Moderate
- Difficult

7. How often did you use the transport weekly ? *

8. How much did you spent for the transportation per week? *

9. How long does it take to wait for the transport ? *

- < 5 minutes
- 5-10 minutes
- More than 10 minutes

10. How satisfy are you with your transport, please state your satisfaction *

	Very Dissatisfied (0)	Dissatisfied (1)	Neutral (2)	Satisfied (3)	Very Satisfied (4)
	○	○	○	○	○

11. Beside your choice, what is your preferred transportion? *

- Walking
- Bus
- Car
- Motorcycle
- E-hailing (Grab / Maxim)
- Bicycle

12. The chosen transportation is always on time. Please rate *

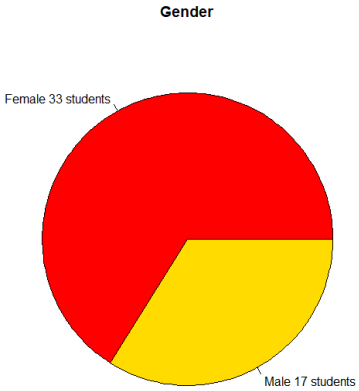
	Strongly disagree (0)	Disagree (1)	Neutral (2)	Agree (3)	Strongly agree (4)
	○	○	○	○	○

13. The chosen transportation is enough so you don't need any other transportation. *

	Strongly disagree (0)	Disagree (1)	Neutral (2)	Agree (3)	Strongly agree (4)
	○	○	○	○	○

Finish Survey

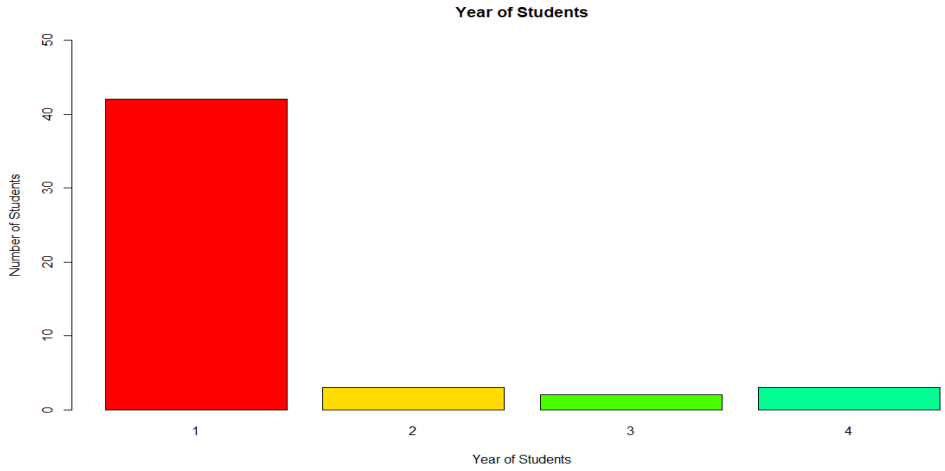
DATA ANALYSIS AND RESULTS



Among the responses that we received, most of the respondents who answered are female with 33 in total (66%) while male with 17 in total (34%). The total respondents is 50.

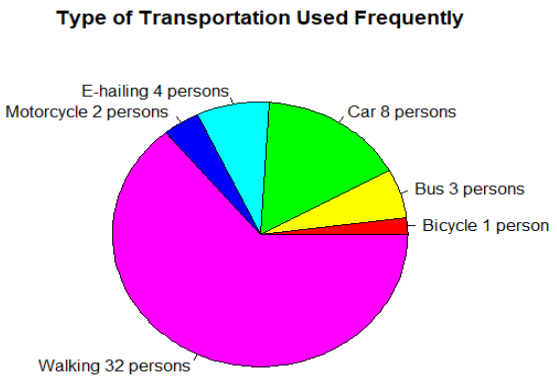
Analysis					
	Mean:	1.66	Std. Deviation:	0.47	Satisfaction Rate: 66
	Variance:	0.22	Std. Error:	0.07	

Most of the respondents are from year 1 with 42 students out of 50. Year 2 and year 4 have the same value which are 3 students while year 3 has the lowest value (2 students).



Analysis					
	Mean:	1.32	Std. Deviation:	0.81	Satisfaction Rate: 10.67
	Variance:	0.66	Std. Error:	0.11	

Based on the pie chart below, it shows the type of transportation used frequently. It shows that most of the students prefer to walk when going to class which is 32 persons while 8 people are driving by car. Next, 4 people choose e-hailing, 3 people choose to use a bus and 2 people choose a motorcycle. Lastly, there is one person who chooses to use a bicycle.

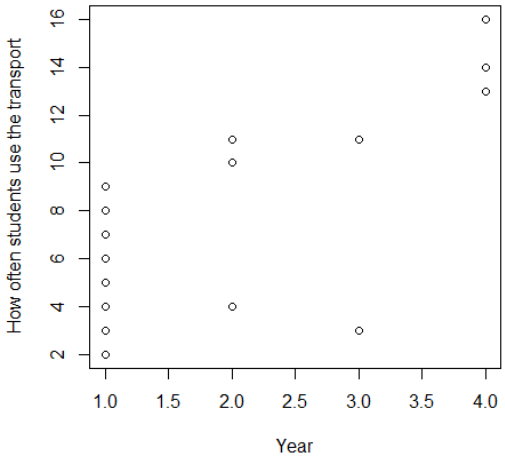


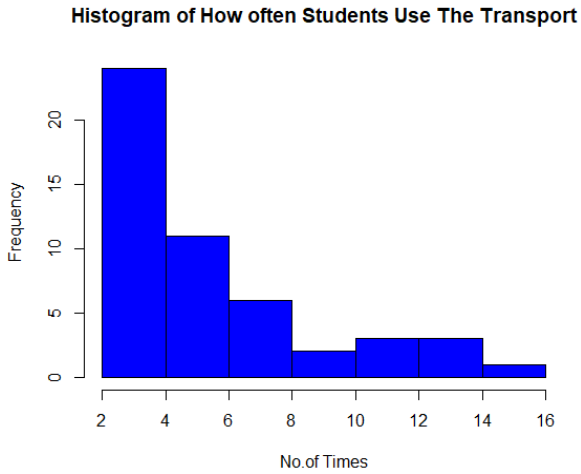
Analysis	Mean:	1.92	Std. Deviation:	1.41	Satisfaction Rate:	18.4
	Variance:	1.99	Std. Error:	0.2		

The decimal point is at the |

```
 0 | 00000000000000000000000000000000000
 2 |
 4 |
 6 | 8
 8 | 75
10 | 57
12 | 2568
14 | 4504
16 | 1
```

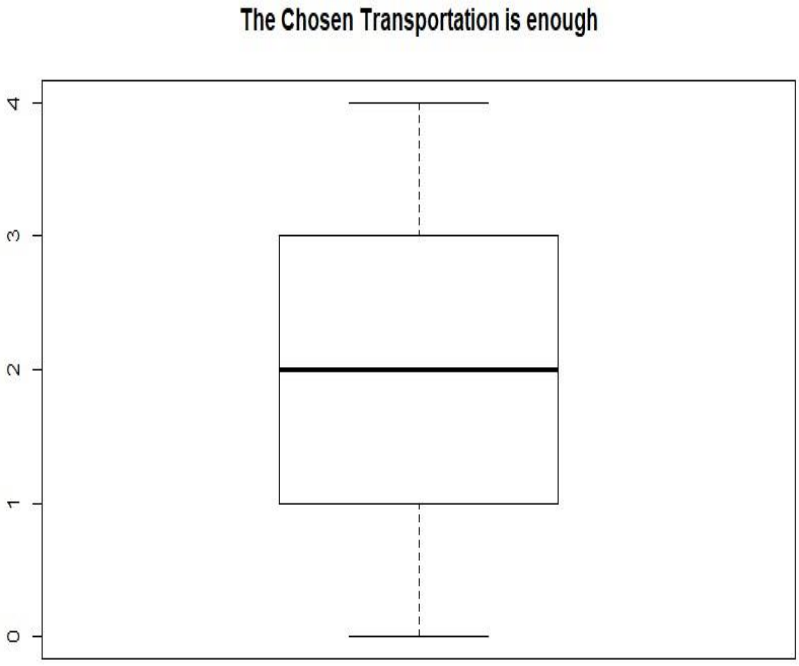
The stem and leaf show the cost of the transportation that students had spent in a week. Some of them paid nothing while some of them paid about RM16.10 a week.





The scatter plot and the histogram show the relation between how often students use the transport and year of study of the student. As we can see, 4th year students mostly said that they frequently use the transportation in a week which ranges between 13-16. While on the other hand, 1st year students range between 2-9 times a week.

The boxplot is to represent the data of whether the chosen transportation is enough. 0 strongly disagrees, ranging to 4 which strongly agree. The mean is at number 2 which is neutral.



Time Taken to Wait For the Transportation

Class Interval	Class Boundaries	Class Midpoint	Frequency	Relative Frequency	Cumulative Frequency
1-5	0.5-5.5	3	28	0.56	28
6-10	5.5-10.5	8	15	0.30	43
11-15	10.5-15.5	13	7	0.14	50

The frequency distribution above shows the duration to wait for the chosen transportation ranged between 1 to 15 minutes.

DISCUSSION

Based on the case study that had been held, we can see from the pie chart where the majority of the respondents are females whereby there're 33 of them and males became the minority since there are 17 of them out of 50 respondents. The results clearly show that the population of female students in School of Computing are bigger than males which is related to the majority of females respondents. Next, the bar chart presents that most of the respondents came from year 1 since the form was spread among the freshmen and several upper years. The large amount of freshmen somehow affected the results of preferred transportation among students whereby walking was preferable as shown in the pie chart of frequently used transport. This is because the freshmen preferred walking than using other transportations since they are not allowed to bring any type of transportation. From stem and leaf, as you have seen that the maximum amount spent for the transportation per week is MYR 16.10 where we can assume that it's mostly contributed by students who use e-hailing and cars as their transportation. Besides, the scatter plot shows that the upper year students often use their transports since the majority of car users are upper year students. From that, the maximum amount spent contributed by e-hailing and car users is proven. As for the histogram, the highest frequency for transport use goes to 2. This is because we can conclude that most of the respondents are the freshmen where they rarely moved around the campus since they usually walked rather than using other transport. By using frequency table distribution, we could summarize the amount spent per week and the frequency of it. From the table provided, the highest frequency of the duration was in 1-5 (min) interval which logically the transportation that has been used are walking, bicycle, car and motorcycle since it doesn't take much time to wait like busses and e-hailing. As a bus user, most of the students have to wait up to 15 minutes since busses do have their own schedule. Although it's widely answered, we also suffered from some limitations due to the number of freshmen's respondents who are greater than the others.This somehow affected the overall results where we can see the other transportation didn't get as many respondents as walking. Because as we all know, most upper year students are cars preferable rather than walking or the other transportation provided. In order to overcome these problems, we should blast the form to other years instead of freshmen only so that this will not be biased by freshmen.

CONCLUSION

In conclusion, most of the students choose to move around the UTM by walking. Based on the survey, 32 students prefer walking as a transportation for their daily activities. Meanwhile, bicycles were the least preferred as transport to use often. Consequently, the cost needed for the transportation is not needed since walking doesn't need to pay anything. Other than that, the time taken for a student to wait for the transport is within 1-5 minutes. This is proven by the majority of students which is 28 students claimed that they just need a short time to take the transport. In addition, 36% of the students also rated their transportation good or agreed because it was convenient. Lastly, the cafe was chosen as students' favourite spot based on the statistic that has been observed.

```
>data1 <- read.csv(file.choose(),header=T)

>View(data1)

>Attach(data1)

>Countgender<- table(Gender)

>Countgender

Gender
Female   Male
    33     17

>Countgen <- c(33,17)

>lbls <- c(“Female 33 Students”,”Male 17 Students”)

>pie(countgen, labels=lbls, main ”Gender”,col=rainbow(7))

>countyear <- table(Year)

>barplot(countyear, main= “Year of Students”, col=rainbow(7),ylim=c(0,50))

>counttype <- table (Type.of.transportation.used.frequently)

>counttype
Type.of.transportation.used.frequently
  Bicycle       Bus       Car E-hailing Motocycle   Walking
        1         3         8         4         2        32

>Countty <- c(1,3,8,4,2,32)

>Lbls <- c(“Bicycle 1 student” , “Bus 3 students”, “Car 8 students”,”E-hai
ling 4 students”,”Motorcycle 2 students”,”Walking 32 students”)

>pie(countty, labels=Lbls,main ="Type of Transportation Used Frequently",c
ol=rainbow(7))

>table(Satisfaction.of.the.transport)
Satisfaction.of.the.transport
 0  1  2  3  4
 5  6 18 14  7

>boxplot(Satisfaction.of.the.transport)

>plot(data1$Year,data1$`Frequency to use the transport weekly`,xlab = "Yea
r",ylab = "How often students use the transport")

>boxplot(Satisfaction.of.the.transport)

>hist(Frequency.to.use.the.transport.weekly.1, main= "Histogram of Frequency to Use
The Transport", col= rainbow(7), xlab = "No. of Times",ylab="Frequency")

>stem(data1$ ‘Cost of the transport’)
```