



# UTM

UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
**FACULTY OF ENGINEERING**

**SECI2143-04 PROBABILITY & STATISTICAL DATA  
ANALYSIS**

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**PROJECT 1 : REPORT**

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COURSE : COMPUTER NETWORK AND  
SECURITY

COURSE CODE : 1SECR

SECTION : 04

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DATE OF SUBMISSION : MONDAY, 12<sup>TH</sup> APRIL 2020.

## Table Of Contents

1. Cover Page.....	1
2. Table of Contents.....	2
3. Introduction.....	3
4. Methodology.....	4-5
5. Data-set.....	5-12
6. Conclusion.....	13

## **I. Introduction**

In UTM, there are many places that provide a variety of delicious food for students at affordable prices. Arcade Angkasa and Mak Ngah's cafe are one of these places that are located at Kolej Tun Dr. Ismail (KTDI). However, Mak Ngah's cafe has been the number one choice among students especially those who are staying at KTDI.

Mak Ngah's cafe offered the cheapest price for its food and has a variety of food to choose from. During the night, they provide an outdoor eating place. It is to make the students feel at ease when eating while watching the night sky and feel the cold breeze. However, the objective of the students, which is to eat, is spoiled if they have to wait for a long time for the food to get served.

Therefore, we come out with a study to investigate a suitable time for students to order food at Mak Ngah's cafe without having to wait for too long during dinner. We are mainly focusing on dinner is because dinner is the most crowded time compare to other times. By the end of this report, we hope to achieve the objective of this study to help KTDI students to dissipate their concerns.

## II. Methodology

Throughout this project, we carried out various kind of method to obtain the ultimate result. One of the method is observation. We tried to observe at what time is the most crowded in Mak Ngah Café. To carry out this observation, we stayed at Mak Ngah Café from 6.00 p.m. until 10.00 p.m. to observe. Based on our observation, the peak hour in Mak Ngah Café during dinner is from 8.00 p.m. until 8.30 p.m.. We also observed that during the peak hour, most customers only get their food after twenty minutes and more. This situation will somehow burdened the students as they need to rush for meetings or group discussion.

To support our observation, we also did a survey using Google Form. The link for this survey is shared in Kolej Tun Dr Ismail whatsapp group as Mak Ngah Café is located in this college area. We managed to get 40 respondents from our survey. One of the question that we included in this survey is how often they eat dinner at Mak Ngah Café because some people who lives further from Mak Ngah Café might rarely goes to this café. Other than that, we also asked the respondent whether they prefer dine in or take away and the food that they used to order when they are rushing. This is because different kind of food is served by different chefs in different cooking station. Therefore, the time for the food to be ready is not the same.

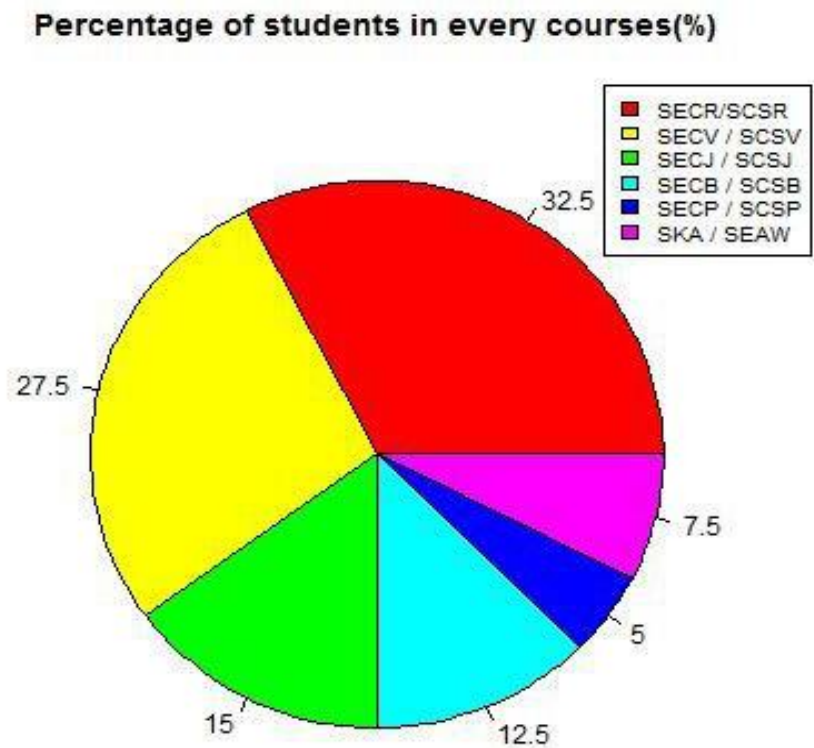
Other than that, the most important question in this survey is the average time to get the food that they ordered. Therefore, we can compare the result from this survey with our observation. In the survey, we also asked the respondent if they ever experienced late food serving in Mak Ngah Café and the reason why they are served late. This is to prove that during the peak hour, most student get their food late. At the

end of this survey, we also asked the respondent to give their rating for Mak Ngah Café.

### **III. Data-set**

Based on the data set we had collected from the Google Form, mostly our responses were female (27 responses) and first-year students (37 responses). The result also shows that the most crowded day was on Monday and the less on Friday. They also most prefer having dinner between 7.30 p.m until 8.00 p.m. .Starting from 9.00 p.m fewer students having dinner at Mak Ngah Cafe. Hence, fewer students went to Mak Ngah Cafe on Friday at 9.00 p.m and above. Furthermore, when students are rushing, the data shows the highest food ordered is ‘Roti Canai’ and the lowest one is ‘Nasi Ayam Penyet’. The reason could be ‘Roti Canai’ more easier to serve and best eat during dinner. Moreover, from the data we also can see more students prefer dine-in (27 responses) than take-away (13 responses). However, 39 from 40 responses stated that they had experienced late food serving. Most of them ‘strongly agree’ that the reason is too many orders and ‘strongly disagree’ about the lack of ingredients. From the results, the highest ‘agree’ is bad service, the highest ‘disagree’ is a lack of ingredients and the highest ‘neither’ is bad service and lack of ingredients. Even so, the main reason could be too many order because it show high ‘agree’ and highest ‘strongly agree’. As for the rating part, most responses gave 3 stars (34 responses) for Mak Ngah Cafe. 5 responses gave 2 stars and 4 responses gave 4 stars. Besides, some of the data were used for R programming:

1. Pie chat of the percentage of students in every course (%).



Based on the chart, it shows that the highest responses we got were from SECR/SCSR students (32.5 %) and the lowest responses we got are from SECP/SCSP students (5%). We also got 27.5% responses from SECV/SCSV students, 15% from SECJ/SCSJ students, 12.5% from SECB/SCSB students and 7.5% from SKA/SEAW.

2. Stem and leaf of the average money students spend in a week.

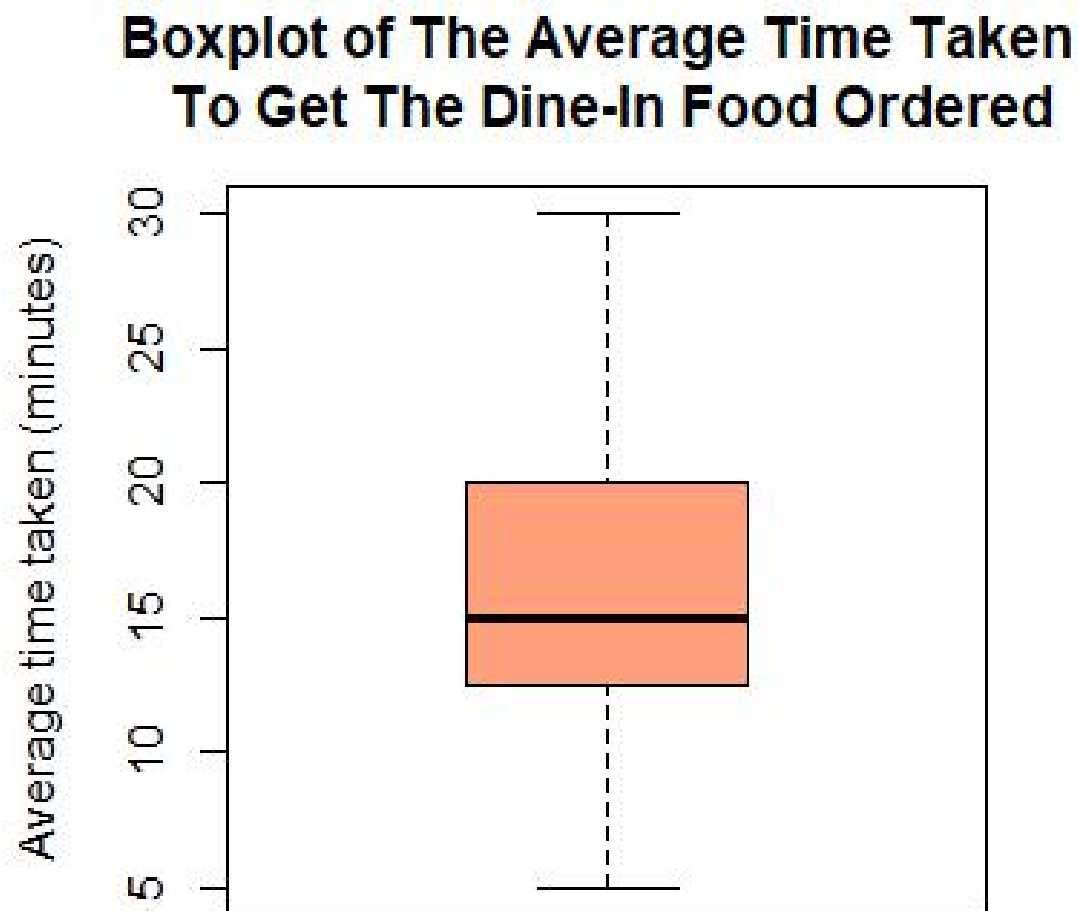
The decimal point is at the |

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Key : 3|0 = RM 3.0

From the stem and leaf, we can see the highest average money students spend in a week is RM40 and the lowest is RM3, but most of them spend around RM5 in a week (mode = RM5).

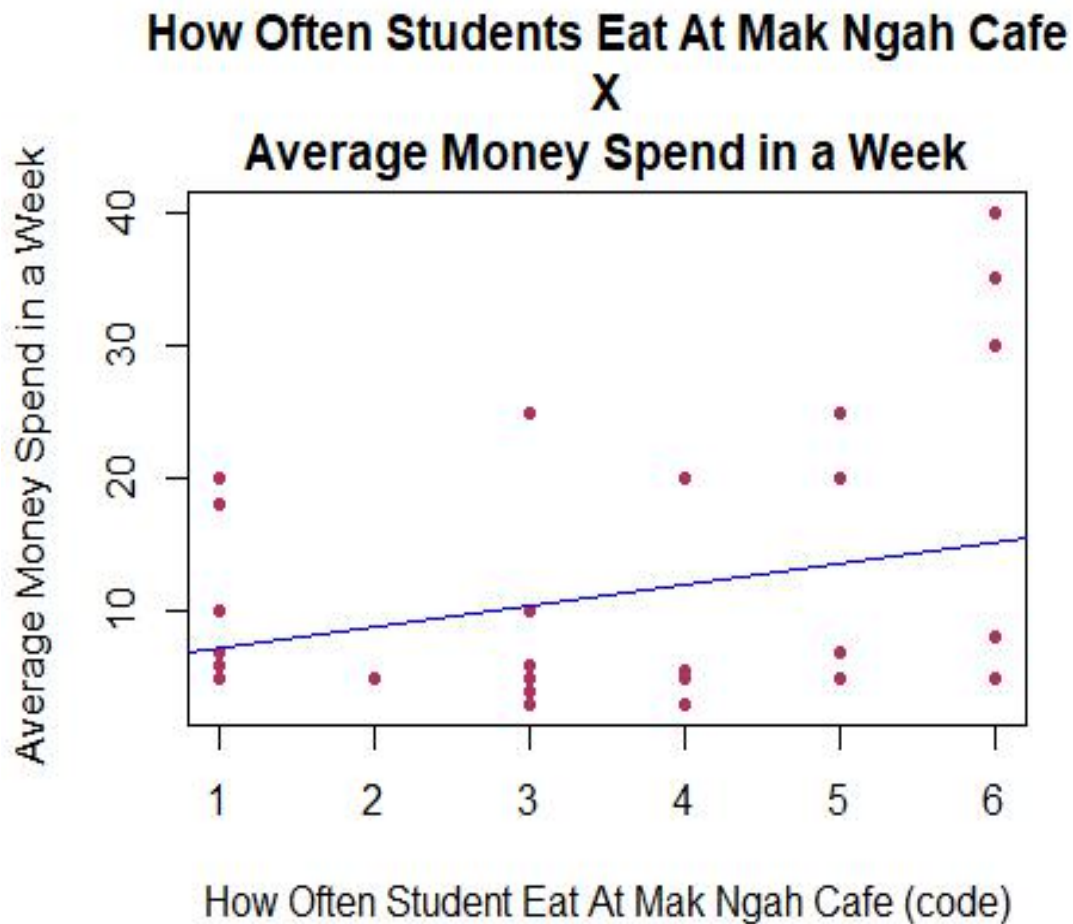
3. Box plot of the average time taken to get dine-in food ordered.



The boxplot show that medium (quartile two) time taken is 15 minutes, quartile one is 13 minutes, quartile three is 20 minutes. Range = 30 - 5, which is equal to 25. So, the range is 25.



4. Scatter plot of relationship between how often students eat at Mak Ngah Cafe and average money spend in a week.



From the graph we can see the more often the student eat at Mak Ngah Cafe, the average money spend in a week will be higher. So, this data is a positive correlation because both data set increase together.

5. The frequency distribution table of the average time taken for the take-away food ordered:

	Average_time	Freq	Rel_Freq	Cum_Freq
1	(0, 5]	1	0.07692308	1
2	(5, 10]	5	0.38461538	6
3	(10, 15]	4	0.30769231	10
4	(15, 20]	3	0.23076923	13
5	(20, 25]	0	0.00000000	13
6	(25, 30]	0	0.00000000	13

**Calculation:**

$$\begin{aligned}
 \text{Mean, } \bar{x} &= \frac{\sum fx}{\sum f} \\
 &= \frac{1(2.5) + 5(7.5) + 4(12.5) + 3(17.5)}{1 + 5 + 4 + 3} \\
 &= 10.96
 \end{aligned}$$

$$\begin{aligned}
 \text{Median} &= L + \left( \frac{\frac{N}{2} - F}{f_m} \right) c \\
 &= 10 + \left( \frac{\left( \frac{13}{2} - 6 \right)}{4} \right) (5) \\
 &= 10.625
 \end{aligned}$$

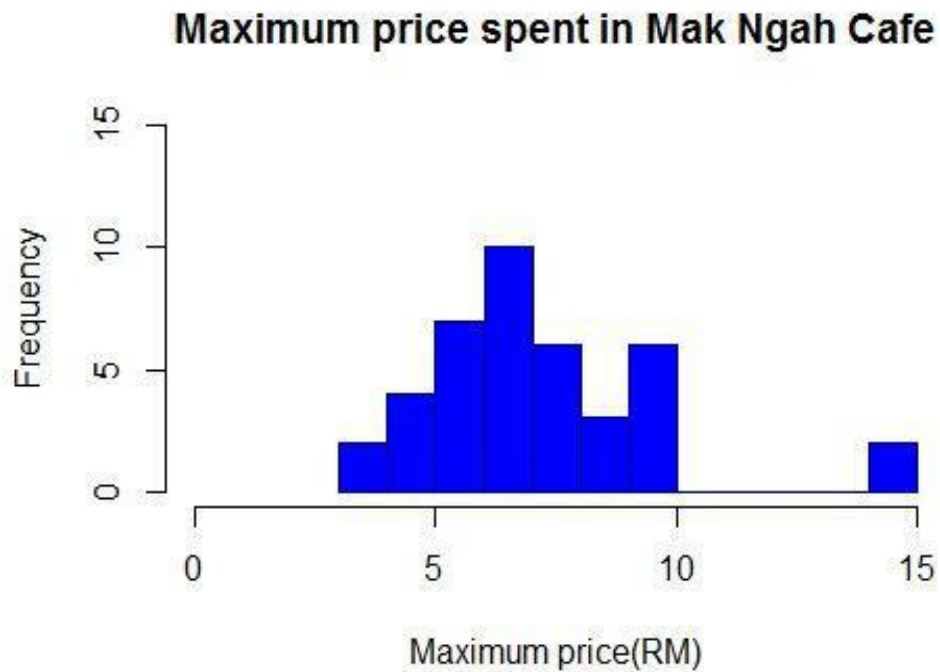
$$\begin{aligned}
 \text{Variance, } \sigma^2 &= \frac{\sum fx^2 - \frac{(\sum fx)^2}{n}}{n - 1} \\
 &= \left( \frac{1831.25 - \frac{(10.96)^2}{13}}{13 - 1} \right) \\
 &= 151.83
 \end{aligned}$$

$$\begin{aligned}
 \text{Standard deviation, } \sigma &= \sqrt{\text{variance}} \\
 &= \sqrt{151.83} \\
 &= 12.32
 \end{aligned}$$

$$\begin{aligned}
 \text{Mode} &= l + \left( \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) \\
 &= 5 + \left( \frac{5 - 1}{2(5) - 1 - 4} \right) (5) \\
 &= 9
 \end{aligned}$$

The mean is 10.96 minutes, the mode is 9 minutes, the median is 10.625 minutes, the variance is 151.83 and the standard deviation is 12.32 minutes. This shows 50 % of responses take more than 10.625 minutes to get their take away food and another 50% take less than 10.625 minutes to get their take way food. As for the standard deviation, which is 12.32 minutes, it indicates the range of time taken to get the take-away food ordered it quite large. Since mean bigger than median and median bigger than mode, thus the distribution of these data is positively skewed.

6. Histogram of the maximum price spend in Mak Ngah Cafe during dinner in histogram graph. Below is the histogram:



Regarding to the histogram, the highest price student spend in Mak Ngah Cafe during dinner is RM15. However, students mostly spend a maximum of RM7 when having dinner at Mak Ngah Cafe (mode = RM7).

#### **IV. Conclusion**

In general, we can clearly see which time is suitable for the students to have dinner at Mak Ngah's cafe. As stated earlier, students either can have dinner earlier and eat on a day where students are less expected. Other than that, the other alternatives to get the food faster is to order food which consumes not much time to make such as roti canai and burger.

As the study shows, students can manage their time and money wisely according to their schedule and budget. We understand that students have other commitments to do rather than waiting for their food. Hence, by doing this study, we hope that the students have no more concerns regarding this study.