UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECI 2143-04 PROBABILITY & STATISTICAL DATA ANALYSIS – SEMESTER 2

Project 1

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1.Introduction or background

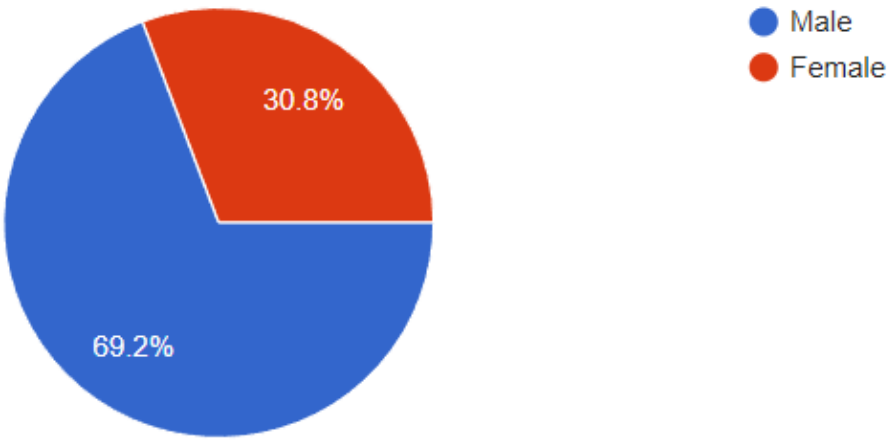
Video games are electronic, interactive games known for their vibrant colours, sound effects, and complex graphics. Since Malaysia was hit by COVID-19 outbreak in 2019, video games became famous among teenagers and students and were considered as one type of sport. Due to COVID-19 a lot of industries in Malaysia have been affected including student education where a lot of schools and universities need to conduct their teaching and learning sessions online. Online learning might be easier for students since they do not have to attend school or universities physically, but this scenario is also easier for them to lose their focus on study since they can easily do something else without their teacher noticing such as sleeping, playing video games, watching television and others. So in this project our group is discussing about “video games affect students' study performance”.The main purpose of this project is to prove that playing video games has a bad impact on students' study performance. We also want to identify which categories of students that are more tend to play video games such as their gender and age. Moreover, we also want to identify what was the main reason a lot of students lose their focus on study due to playing games . For example, students lose their focus because of lack of sleep or maybe they could not manage their time wisely. By doing this, we could prepare a solution to prevent this problem from repeating again. For example,if most of the students lose their focus because of lack of sleep, parents or guardians should implement parental control on their children's devices so that they have enough sleep. Next, if students lose their focus because they could not manage their time wisely, students should create a study timetable and follow it so that they would be able to finish all of the assignments, study and not spend too much time on playing video games. Moving on, we could also analyse students' most frequent time of playing games whether they are playing games in the morning, afternoon, night or midnight. This data could be evidence of students' lack of sleep. We expected that students who are not having enough sleep usually sleep less than 8 hours which leads them to feel sleepy in the morning class.Moreover, we also expected that students who have problems managing their time often miss doing their homeworks or assignments because they spend too much time on video games. Lastly, we expected that the majority of the respondents will use laptops and smartphones as their devices to play games.

2. Data Collection

For this project, we want to collect data on how video games affect the student performance. Thus, in order to do that we are using some of the students from University Technology of Malaysia as the sample to be the representative of the whole student population. We are collecting the data by using the google form to make a questionnaire that has been passed out and filled in by a total of 61 students. The questionnaires are randomly filled by varieties of students from different kinds of age, gender, year and CGPA. Therefore, to make our data become more proper, firstly in the questionnaire, we collect the information of the respondents by asking them the gender, age, year they are currently in and their latest CGPA. This will help us to measure the data more efficiently as we can see how differently the games can affect each gender, age and year. Moreover, it will make it easier for us to draw the inferences and conclusions for this project. Then, we proceed with varieties of questions to collect the data and measure the effect of playing video games on their performance. The second part begins with the rating of the passion of the respondents in playing video games. After that, we collect the data of how the respondents play video games such as what kind of devices that they are using, how long they spend their time on it and when they usually play. Moving on to measure the effect, we proceed to ask the respondent with their opinion of playing video games like can it be the cause of missing completion of assignment, relieving stress, disturbance of sleeping times and finally giving their point of view whether the games brings more advantages or the opposite. While most of the questions required the respondent to answer the question by rating, there are also several questions for them to answer with choices and short answers. With all of these data, we already have each type of data from qualitative to quantitative and also every level of measurement such as nominal(Gender), ordinal(The likert scale in the questionnaire), interval(Time spend on playing video games) and finally the ratio(number of female/male students).

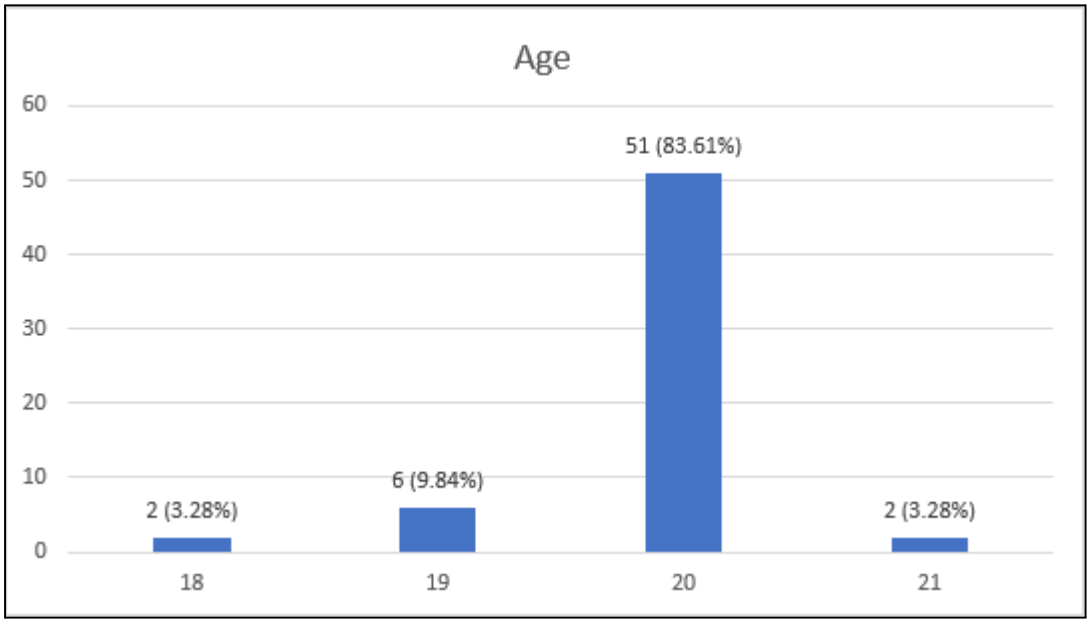
3. Data Analysis

Gender (Pie chart)



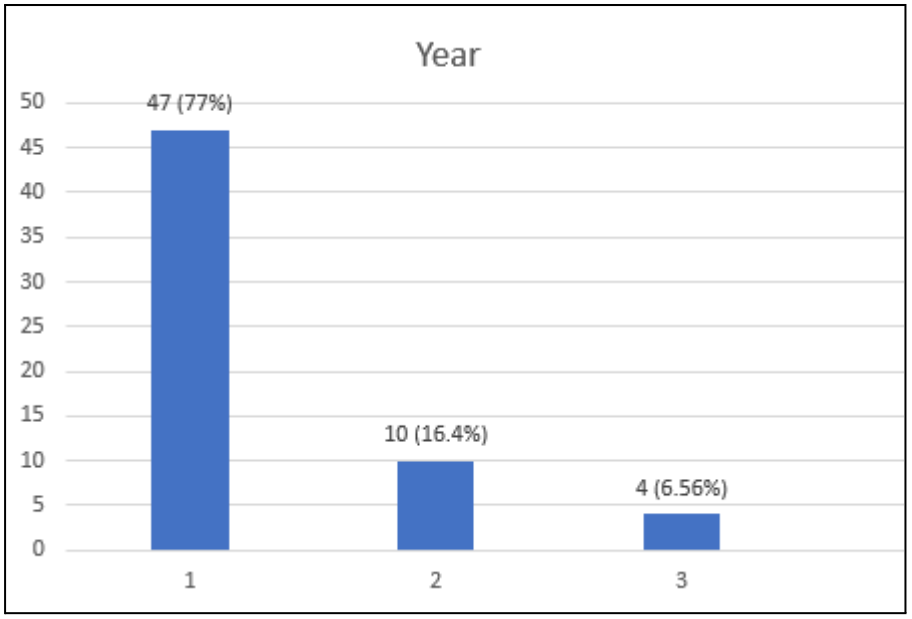
Explanation: Based on the pie chart, the majority of the respondents are male with 45 students (69.2%) while 20 students are female (30.8%).

Age (Bar Chart)



Explanation: There are 3.28% of 18 and 21 years old respondents, 9.84% of 19 years old and the major respondents are 20 years old which is 83.61%

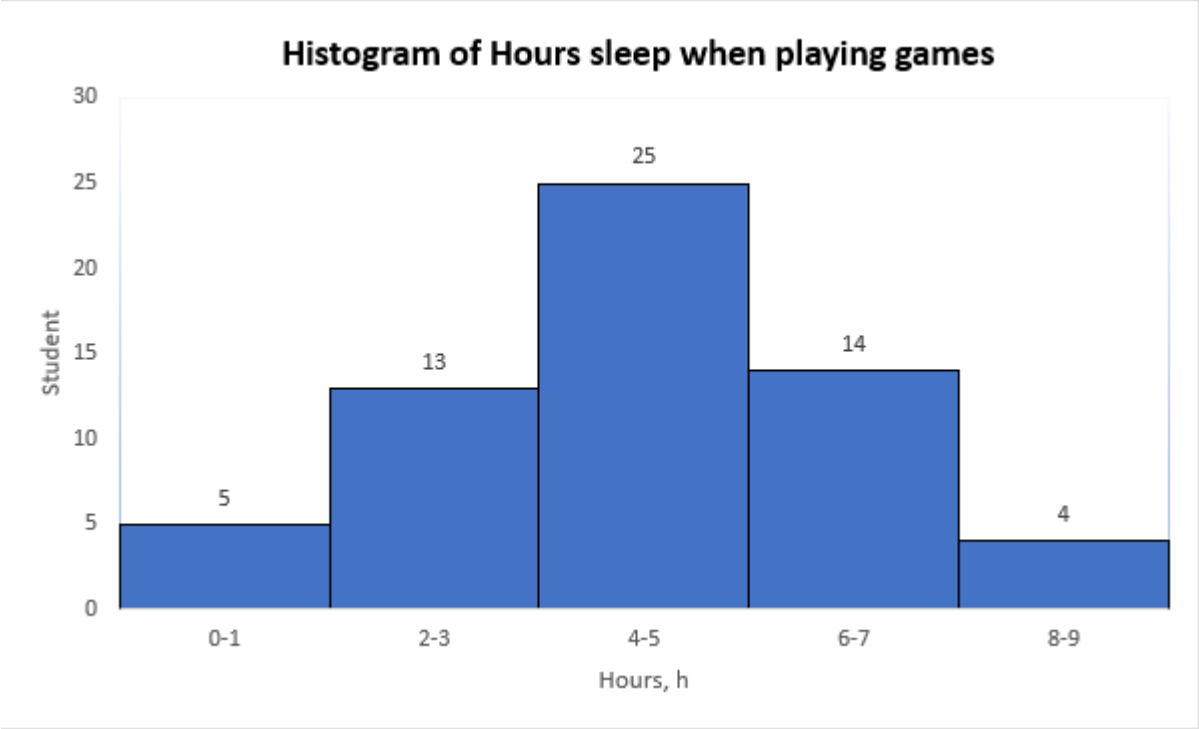
Year (Bar Chart)



Explanation: The major respondent is student from year 1 (77%) while the others are students from year 2 (16.4%) and year 3 (6.56%).

Hours sleep when playing games (Frequency distribution table)

Class Interval	$Frequency,\ f$	Cumulative frequency, cf	Midpoint, x	X^2	$f(x)$
0-1	5	5	0.5	0.25	2.5
2-3	13	18	2.5	6.25	32.5
4-5	25	43	4.5	20.25	112.5
6-7	14	57	6.5	42.25	91
8-9	4	61	8.5	72.25	34



Calculation:

$$Mean,\ \bar{x} = \frac{\sum_{i=1}^{h} fiXi}{n}$$

$$= \frac{5(0.5)+13(2.5)+25(4.5)+14(6.5)+4(8.5)}{61}$$

$$= \frac{272.5}{61}$$

$$= 4.47$$

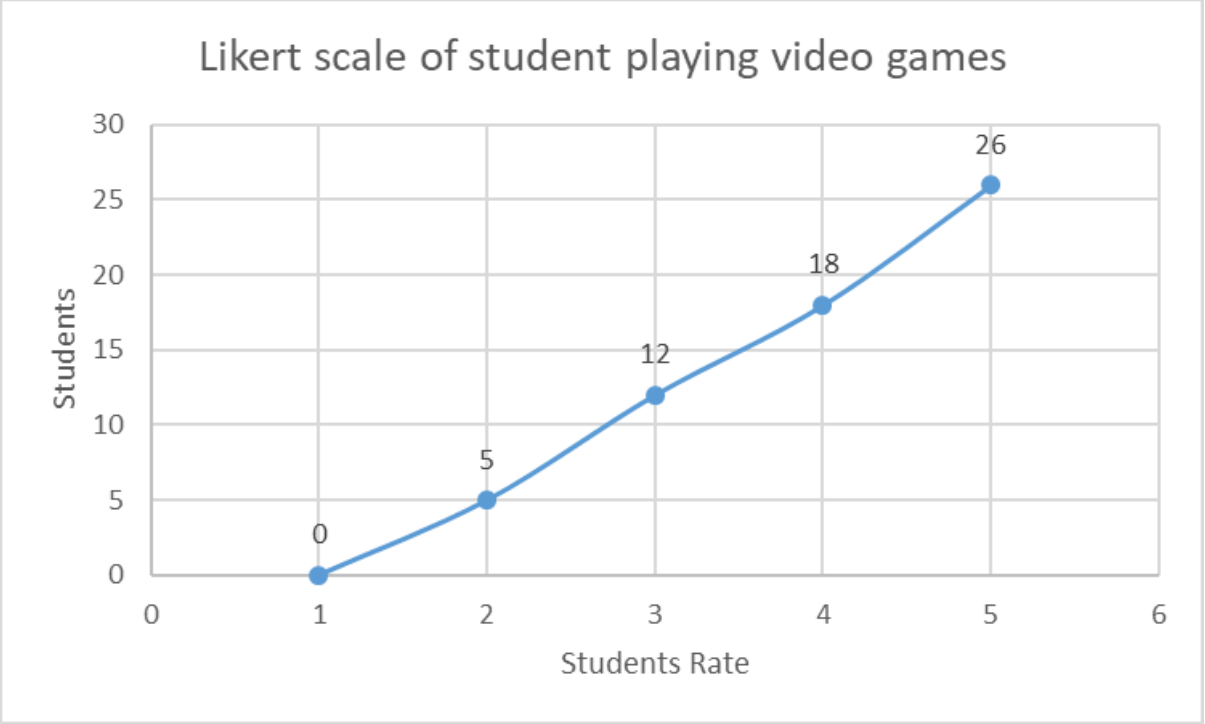
$$Mode,\ l + h \times [(f1 - f0) \div (2f1 - f0 - f2)]$$
$$= (4 + 1) \times [\frac{25-13}{2(25)-13-14}]$$
$$= 2.61$$

$$Median,\ L + \frac{\frac{N}{2}-cfp}{fmed}(w)$$
$$= 4 + \frac{\frac{61}{2}-18}{25}(1)$$
$$= 4.5$$

$$Variance,\ s^2 = \frac{\sum_{i=1}^{n}(xi-\bar{x})^2}{n-1}$$
$$= \frac{(0.5-4.47)^2+(2.5-4.47)^2+(4.5-4.47)^2+(6.5-4.47)^2+(8.5-4.47)^2}{61-1}$$
$$= 0.67$$

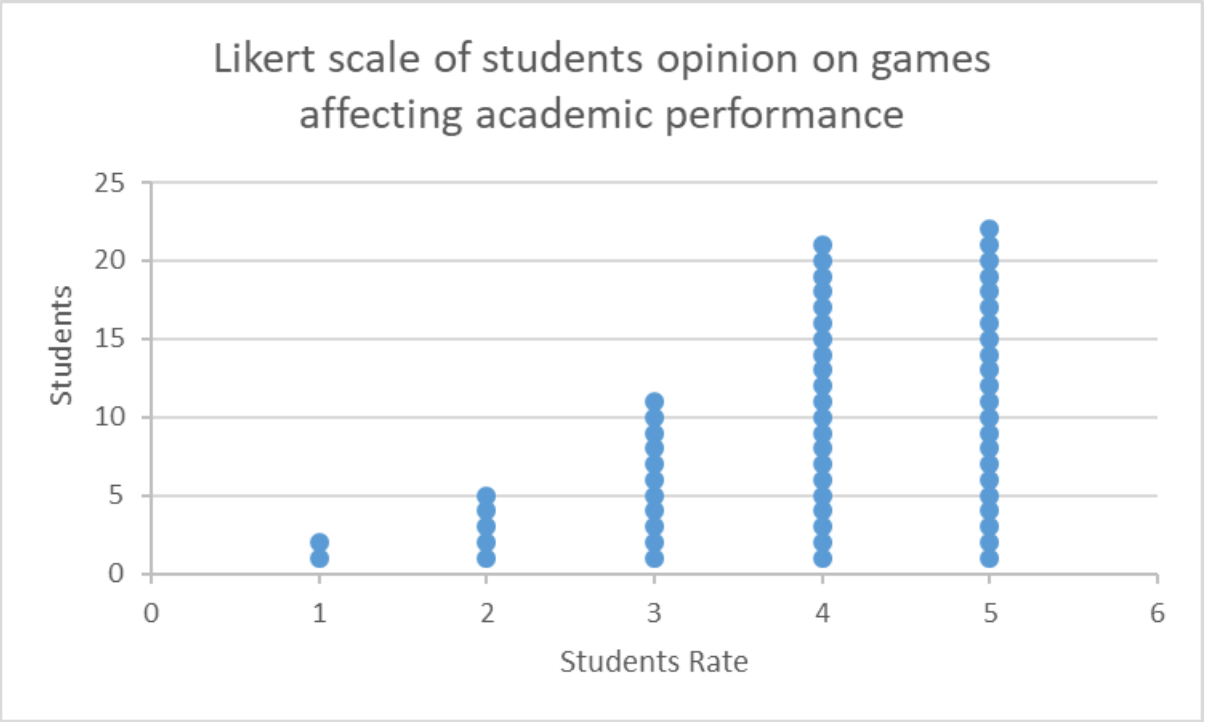
$$Standard\ Deviation,\ s = \sqrt{s^2}$$
$$= \sqrt{0.67}$$
$$= 0.82$$

Do you like to play games ? (Scatter Plot)



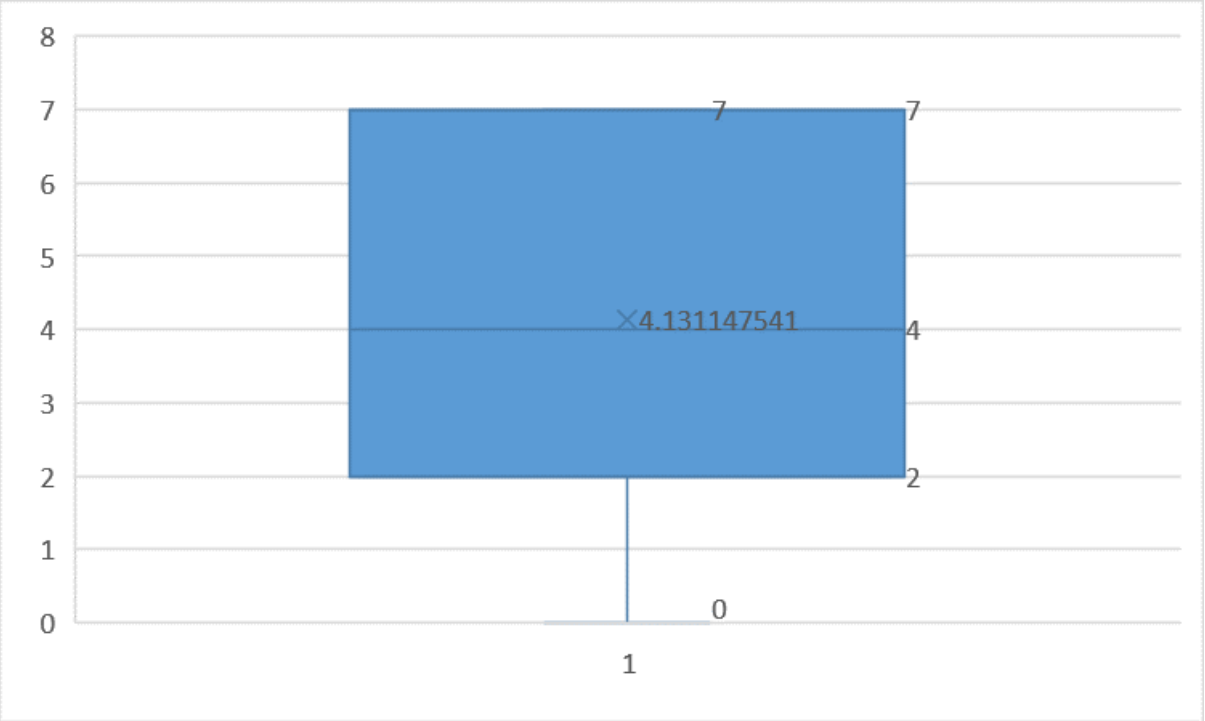
Explanation: The majority of students very much like to play games which has the rate of 26 students, while 18 students like to play, 12 students found that playing video games just neutral for them, 5 students dislike to play and finally there are none students who really dislike playing video games.

Do you agree spending too much time on game will affect academic performance?(Dot Plot)



Explanation: Most of the students very much agree that spending too much time on games will affect their academic performance (22 students), there is only one difference to the one who agree to the same statement (21 students). While 11 students seem that it will not much affect their academic performance, there are also 5 students who disagree with the statement and finally 2 students who seem to very disagree with the statement.

How many days do you play games in a week ? (Box Plot)



Explanation: The minimum days of students playing video games is 0. The first quartile of the days is 2 while the median is 4 and the third quartile is 7. The mean of the days is 4.1311 and the max is 7.

4. Conclusion

After doing the survey about our topic, we can conclude that the majority of the students who love to play games are male and around 20 years old which is not surprising since we all know that most of the famous games type are action, battle arena and shooters (FPS) which more likely to attract boys compared to girls. Besides, at the age of around 20 years old most of the students tend to live independently and not fully under parental control because most parents expected that their children could manage their life by themselves which would give them opportunities to play games freely. Although most of the students from the survey agreed that spending too much time on playing games will affect their academic performances, the average percentage of students who score above 3.50 in their CGPA are 82% which we can say that most of the students are doing great in their academic performance.However we can see that most of the students spend about 2 to 4 hours daily and around midnight playing video game which resulted to lack of sleep. Apart from that, the survey indicates that most of the students rate 3 out of 5 regarding their sleep management which means that they usually did not have enough sleep. As for the impacts, lack of sleep probably disturbs their study performance where they might lose focus on the classes or use their study time to sleep.As a student they should prioritise their sleeping time wisely, not only for their study purpose but also for their health . Next, from the survey most of the respondents are using smartphones and laptops to play games.This is because smartphones and laptops are one of necessary equipment for students nowadays to join their classes and gain information. So, it is reasonable why most of the students play games using laptops and smartphones. Most students sometimes forget to study due to playing games based on the result of the survey. This could be one the evidence that playing games could affect students' study performance . Moving on, the majority of the respondents agreed that playing games could help to relieve stress but students should not take this as a reason for them to overlimit in playing video games.As a conclusions we can see that playing video games would affect students studies in term of their sleeping time and time management to study but playing video games also benefits them in releasing their stress because spending too much time on study also would make someones become numb. So after all it all depends on the individual itself . They just need to control themselves so that they can avoid the consequences of playing video games too often. At last, from this study we can get others' thoughts about a certain topic that we discuss and also apply it with the things that we have learned before in Probability & Statistical Data Analysis class.