



COU4113/COM 301 STATISTICS

Instructions

- i) This exam paper contains SIX questions carrying 10 mark each.
- ii) Use the Case Study passage below to answer the questions
- iii) Round off your answers to the nearest 2 decimal places
- iv) Show all your workings on the answer sheet
- v) Answer any four questions

STATISTICAL ANALYSIS CASE STUDY

Since the outbreak of Covid-19 pandemic, there has been a lot of news about studies reporting increased anxiety in the general populace. A student of statistics scrutinized the reports and found no inferential evidence linking the pandemic to anxiety.

She decided to do a “more credible” study. She hypothesized that it is the exposure to intensive daily negative news media coverage of the pandemic rather than the pandemic itself that caused an increase in anxiety. She referred to this phenomenon as the ‘Bad News Syndrome’.

To test her hypothesis, the student proceeded to collect data from a sample of citizens by conducting a quick street-intercept survey. The student measured anxiety (y) using a 10-point Likert scale ranging from 0= no anxiety to 9=very high anxiety. Intensity of daily exposure to negative news media coverage about the pandemic (x) was measured in hours.

The student recorded her data in the table below:

x	5	2	8	4	5	5	7
y	4	2	6	3	6	5	6

Question 1

Explain the scale of measurement the student assigned to:

- a) intensity of daily exposure to negative news (5 marks)
- b) level of anxiety (5 marks)

Question 2

Calculate the skewness of:

- a) intensity of daily exposure to negative news (5 marks)
- b) level of anxiety (5 marks)

Question 3

Calculate the interquartile range for:

- a) intensity of daily exposure to negative news (5 marks)
- b) level of anxiety (5 marks)

Question 4

Using correlation technique:

- a) present the data in a scatterplot (5 marks)
- b) calculate the correlation coefficient (5 marks)

Question 5

Using linear regression modelling technique, determine:

- a) the number of hours of daily exposure to negative news that would not trigger any anxiety at all (5 marks)
- b) the level of anxiety when citizens are exposed to 10 hours of negative news daily (5 marks)

Question 6

The student concluded that her hypothesis was true. However, a friend of the student argued that her finding was not credible either. The friend drew her attention to the presence of sampling errors in her study. Explain how the student could have minimized:

- a) Type I error (5 marks)
- b) Type II error (5 marks)