

EXAMPLE MQC EXAM QUESTIONS ON STATISTICS FOR MBBSIII

These are examples of the types of questions David Butler has written in the past for MBBSIII MCQ exams. (Note that there are other parts of the third-year lectures not taught by David Butler where you have seen statistical concepts, and these may also appear in your exams. Hence it is possible there will be further questions in your exams relating to statistics, which will be written by staff other than David Butler.)

QUESTION 1

Below is a list of variables that might be measured in a research study:

1. Whether a person has a relative who is alcoholic, recorded as "Yes" or "No".
2. A person's height, recorded in centimetres.
3. How long a person was in hospital for, recorded as the number of days.
4. A person's income, recorded as "under \$10 000", "\$10 000 - \$50 000", "\$50 000 - \$100 000", "over \$100 000".
5. The change in concentration of an enzyme in a person's urine, recorded as a percentage of the original.
6. The treatment group a person was in, recorded as "Group 1", "Group 2" and "Group 3"

Decide whether each variable is categorical or numerical, then choose the most appropriate option.

- A. 1, 6 are categorical; 2, 3, 4, 5 are numerical.
- B. 1, 4, 6 are categorical; 2, 3, 5 are numerical.
- C. 1, 3, 4, 5, 6 are categorical; 2 is numerical.
- D. 4 is categorical; 1, 2, 3, 5, 6 are numerical.
- E. 1, 5, 6 are categorical; 2, 3, 4 are numerical.

QUESTION 2

Researchers want to find out which of two methods of dressing wounds are more effective at preventing infection. Seventy rabbits are each given two similar wounds, which are dressed with the two methods. For each rabbit, it is recorded whether each wound has an infection or not.

Choose the most appropriate procedure to decide if the method of dressing wounds has an effect on whether there is infection:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 3

In a survey about people's relationship with their pets, one of the questions asked if the person felt guilty when they left their pets alone when they went on holidays. The response for each person was recorded as "Yes – feels guilty" or "No –does not feel guilty". The researchers were interested to see if men and women felt differently in this situation.

Choose the most appropriate procedure to decide if the feeling of guilt about leaving pets alone is different for men and women:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 4

An observational study attempted to find out if the shape of a person's face had any relationship to their athletic ability. The researchers took measurements of the faces of 104 professional baseball players, calculating the width-to-height ratio of each player's face. They also recorded the number of home runs for each player in the last two baseball seasons.

Choose the most appropriate procedure to decide if number of home runs has any relationship with the width-to-height ratio of the face:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 5

In a particular study, 20 participants were each sent to two rooms for interviews. Before one interview, they were asked that they assume closed poses such as crossed arms and hunched shoulders. Before the other, they were asked assume open poses such as hands behind the head or feet on the table. The concentration of the stress hormone cortisol was measured for each patient after each interview.

Choose the most appropriate procedure to decide if there is a relationship between posture and cortisol concentration:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 6

In weight loss program, 50 participants were randomised to two groups. One group were instructed to eat lunch before 2pm, and the other group were instructed to have lunch after that time. At the end of the program, the percentage weight loss for each patient was recorded.

Choose the most appropriate procedure to decide if there is a relationship between the time of day a person eats lunch and their percentage weight loss:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 7

Researchers were interested in the care of head trauma patients while in hospital. From the hospital records, they recorded information about 400 patients across several hospitals. Some of the information they recorded was whether the patient's brain injury was on the left or right side or both, and also whether they developed an infection while in hospital.

Choose the most appropriate procedure to decide if the location of the brain injury has any effect on whether the patient developed an infection while in hospital:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

QUESTION 8

To investigate the effect of fruit on cholesterol, 40 participants were randomised into two treatment groups. Both groups were given the same information about healthy diet and activity, but one group was also instructed to eat 75 grams of dried apple every day. The cholesterol level for every participant was measured (in mmol/L) before the study, and six months later, and the change was calculated.

Choose the most appropriate procedure to decide if eating apple has any effect on the change in cholesterol:

- A. Chi-squared test for independence
- B. Paired T-test
- C. Unpaired T-test
- D. Linear regression
- E. McNemar's test.

WARNING

ANSWERS ARE ON THE NEXT PAGE

DON'T PEEK!

ANSWERS

1. B
2. E
3. A
4. D
5. B
6. C
7. A
8. C