Mock Exam Questions

Data Analysis for Psychology in R 1

Important

Communications about the course:

- You cannot ask for a lab day/time change anymore. Do not submit any more *Group Change Request Forms*.
  - Only a limited set of reasons will be accepted for a lab change at this stage, but this is done via the course organiser.

- You must be registered for a table group on LEARN, for example Group <number>.<letter>
  - Go to Course Learn page > click Groups > expand Labs_1_2_3 > Join group corresponding to table name

Important

For the exam:

- Main Exam Diet S2 (April/May). The exact date and location will be set and announced by the University timetabling unit - the teaching staff doesn't know in advance
- You must bring your student ID for identification
- Format:
  - In-person written exam in an exam hall, closed-book
  - 2 hours long
  - 60 multiple choice questions (MCQs)
- What you can bring (in a transparent bag):
  - A calculator
  - Pencils (multiple!)
  - Eraser
  - Pencil sharpener
- You will be provided with the following papers:
  - The Exam Questions paper with an Equation Sheet
  - An MCQ answer sheet
  - Script book for rough work
- You **cannot** take any of the three papers above outside the room

All questions are Multiple Choice Questions (MCQs).

You must only select **ONE** answer for each question.

Interactive voting slide

Mock question 1

For a confidence interval, as you increase the confidence level while keeping constant the sample mean and standard error, which of the following is true?

a. The confidence interval becomes wider
b. The confidence interval becomes narrower
c. The confidence interval stays the same
d. The significance level increases

Mock question 2

You have the following R output:

```
> table(data$country)

 UK  Germany  Ireland  Australia  Italy
 9   8        11       5          7
```

What is the mode of the *country* variable?

a. UK
b. Germany
c. Ireland
d. Australia

Mock question 3

Consider the following ordinal variable *y*:

```
> y
 3  3 10  2  6  5  4  6  9
```

What is the median?

a. 3
b. 5
c. 6
d. 5.33

Mock question 4

Suppose you have n data points $x_1, x_2, \ldots, x_n$.

Which statement about the sum of the squared deviations from the mean,

$$\sum_{i=1}^{n}(x_i - \bar{x})^2$$

is true?

a. It is always smaller than the variance
b. It is always negative
c. It is always positive
d. It is in the same unit of measurement as the original data

Mock question 5

You are performing a two-sided test of $H_0: \mu = 100$ against $H_1: \mu \neq 100$.

You have the following output from R:

```
> n
 30
> t_obs
 2.52858
> pt(t_obs, df = n - 1)
 0.9914243
```

Using the R output above, what is the correct p-value for the two-tailed test?

a. 0.9914243
b. 0.0085757
c. 1.982849
d. 0.0171514

Mock question 6

You have the following R output:

```
> tstar <- qt(c(0.005, 0.995), df = n - 1)
> tstar
[1] -2.756386  2.756386
```

What do the two values in **`tstar`** store?

a. The limits of the 95% confidence interval for the population mean
b. The critical values for a two-sided test at the 1% significance level
c. The limits of the 99% confidence interval for the sample mean
d. The critical values for a two-sided test at the 5% significance level

Mock question 7

In R, you have a dataset (`datasample`) which also includes a column representing reaction times (`rt`). You have the following R output:

```
> dim(datasample)
30   5
> xbar <- mean(datasample$rt)
> xbar
10.30
> s <- sd(datasample$rt)
> s
11.23
> tstar <- qt(c(0.005, 0.995), df = n - 1)
> tstar
[1] -2.756386  2.756386
> tstar <- qt(c(0.025, 0.975), df = n - 1)
> tstar
[1] -2.04523  2.04523
```

Which of the following options is a 99% confidence interval for the population mean?

a. [6.11, 14.49]
b. [-2.76, 2.76]
c. [-2.05, 2.05]
d. [4.65, 15.95]