

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 Sem 2 - Labs_1_2_3_4 > 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 – more on this later
 - 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
 - Graph paper 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.

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, \dots, 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]