

Q5

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Due Oct 31 at 11:59pm

Points 1

Questions 10

Available after Oct 28 at 7:25pm

Time Limit 20 Minutes

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## Instructions

This quiz covers material from: **week 5**

Reminders:

- There are 10 questions.
- You have only one attempt.
- You have 15 minutes.
- All lecture quizzes must be completed by Friday of the following week.

## Attempt History

	Attempt	Time	Score
LATEST	<a href="#">Attempt 1</a>	19 minutes	0.9 out of 1

⚠ Correct answers are hidden.

Score for this quiz: **0.9** out of 1  
Submitted Oct 28 at 7:56pm  
This attempt took 19 minutes.

Incorrect

Question 1

0 / 0.1 pts

You want to test if a drug helps regrow hair. You setup an experiment where people with similar amounts of hair loss are randomized into either a placebo group or a drug treatment group. For each patient, head hair coverage is measured at the beginning of the experiment and again after 3 months of the experiment. A patient's hair gain is the difference the 3 month measurement and the first one. How would you know if the drug treatment really helps regrow hair?



Setup a t-test to see if the mean hair gain of drug treatment group is different than the mean hair gain of the placebo group. The drug treatment works if the p-value of the t-test is a very small number.



Setup a t-test to see if the mean hair gain of drug treatment group is different than the mean hair gain of the placebo group. The drug treatment works if the p-value of the t-test is a very large number.



If the mean hair gain of drug treatment group is larger than the mean hair gain of the placebo group then the drug treatment works



If the mean hair gain of drug treatment group is smaller than the mean hair gain of the placebo group then the drug treatment works

## Question 2

0.1 / 0.1 pts

(True/False) Two different datasets with the same mean also must have the same standard deviation.

☐ True

☒ False

## Question 3

0.1 / 0.1 pts

You carry out the analysis and determine there is a linear relationship between the number of cups of coffee you drink and the hours you sleep

at night, noting that the more coffee you drink, the less you sleep at night. The  $\beta_1$  for this relationship would be \_\_\_\_\_.

- ☒ less than 0
- ☐ greater than 0
- ☐ equal to 0
- ☐ undefined

**Question 4****0.1 / 0.1 pts**

The effect size ( $\beta_1$ ) estimates the magnitude of a relationship. The standard error (SE) tells us how confident we should be in that initial estimate. Which is used to calculate the p-value?

- ☒  $\beta$  and SE
- ☐  $\beta$  only
- ☐ SE only
- ☐ neither  $\beta$  nor SE

**Question 5****0.1 / 0.1 pts**

A variable that influences both the dependent variable and independent variable, causing a spurious association is referred to as a(n)

\_\_\_\_\_.

- ☒ confounder

- ☐ predictor
- ☐ outcome
- ☐ statistical test

**Question 6****0.1 / 0.1 pts**

Which of the following would be a possible Pearson correlation ( $r$ ) for two variables that have a strong negative correlation?

- ☒ -0.9
- ☐ -0.2
- ☐ -0.01
- ☐ 0.2
- ☐ 0.9

**Question 7****0.1 / 0.1 pts**

The effect size of a linear regression model ( $\beta$ ) corresponds to

\_\_\_\_\_ .

- ☒ the slope of the line.
- ☐ how far the points are away from the line.
- ☐ whether the points show equal variance across the line

- ☐ whether the observations are independent of one another

**Question 8****0.1 / 0.1 pts**

Why did we not have to worry about multicollinearity in the initial analysis carried out looking at the effect of poverty percentage on teen birth rate?

- ☒ only had a single predictor variable
- ☐ data were not linearly correlated
- ☐ variance was constant across the distribution
- ☐ data were heteroscedastic

**Question 9****0.1 / 0.1 pts**

which of the following are required for a t-test to be valid? check ALL that apply

- ☒ each variable must be normally distributed
- ☒ each variable must have similar variance
- ☐ each variable must have similar mean
- ☐ each variable must always be non-zero

**Question 10****0.1 / 0.1 pts**

To carry out linear regression, certain assumptions must be met. Check all of the following that are assumptions of linear regression.

- ☒ data are linearly related
- ☒ Predictors are not collinear
- ☒ Observations are not autocorrelated.
- ☒ Data are homoscedastic

Quiz Score: **0.9** out of 1