Hypothesis Testing in Python Assessment

Latest Submission Grade 100%

1. Introduction **1 / 1 point**

Recall that we discussed two different types of hypothesis tests for means earlier in the lectures. In the single mean hypothesis test lecture, we tested the hypothesis that a sample mean was **greater than** the null hypothesis mean. In the difference in means for two independent samples lecture, we tested the hypothesis that the difference between two sample means was **not equal** to the null hypothesis difference.

In this quiz, you will perform two similar hypothesis tests. Assume normality of the sampling distribution and equal variances.

In the first test, the **null hypothesis** is that the average **night bedtime** for toddlers who nap **is equal** to the average bedtime for toddlers who don't nap, and the **alternative hypothesis** is that the average bedtime for toddlers who nap **is later than** the average bedtime for toddlers who don't nap.

$$H_0 : \mu_{nap} = \mu_{no\ nap}$$

$$H_a : \mu_{nap} > \mu_{no\ nap}$$

In the second test, the **null hypothesis** is that the average **24 hour sleep duration** for napping toddlers **is equal** to the average 24 hour sleep duration for toddlers who don't nap, and the **alternative hypothesis** is that the average 24 hour sleep duration for napping toddlers **is different from** the average for toddlers who don't nap.

$$H_0 : \mu_{nap} = \mu_{no\ nap}$$
$$H_a : \mu_{nap} \neq \mu_{no\ nap}$$

Question 1

What is the difference of sample mean bedtimes for toddlers who nap and toddlers who don't nap? *(Rounded to three decimal places.)*

- (●) 0.714
- ( ) 0.5355
- ( ) 20.126
- ( ) 0.1785

Correct

2. Given our sample size of n, how many degrees of freedom (df) are there for the associated t distribution? *(again, assume that the two sample variances are equal)* **1 / 1 point**

18

Correct

3. What is the t-test statistic for the **first** hypothesis test? *(rounded to two decimal places)* **1 / 1 point**

- ( ) 3.61
- ( ) 2.61
- (●) 2.41
- ( ) 4.41

Correct

4. What is the p-value for the **first** hypothesis test? *(rounded to four decimal places)* **1 / 1 point**

- 0.9866
- 0.0134
- 0.0147
- 0.0080

Correct

5. For the **second** hypothesis test, do you reject or fail to reject the null hypothesis, **given α = 0.05**? **1 / 1 point**

- Reject
- Fail to reject

Correct