Week 2 Quiz

4/6 points earned (66%)

You haven't passed yet. You need at least 80% to pass.
Review the material and try again! You have 3 attempts every 8 hours.

Review Related Lesson

1 / 1 points

1.
Which of the following is the width of the box in a box plot (shown in orange in the following figure)?

- range
- IQR

Correct Response

- mean

standard deviation

median

0 / 1 points

2.
The distribution of exam scores (ranging from 0 - 100%) where the mean score is 75%, the standard deviation is 12%, and the median is 78% is most likely

uniform

symmetric

Incorrect Response

[redacted]

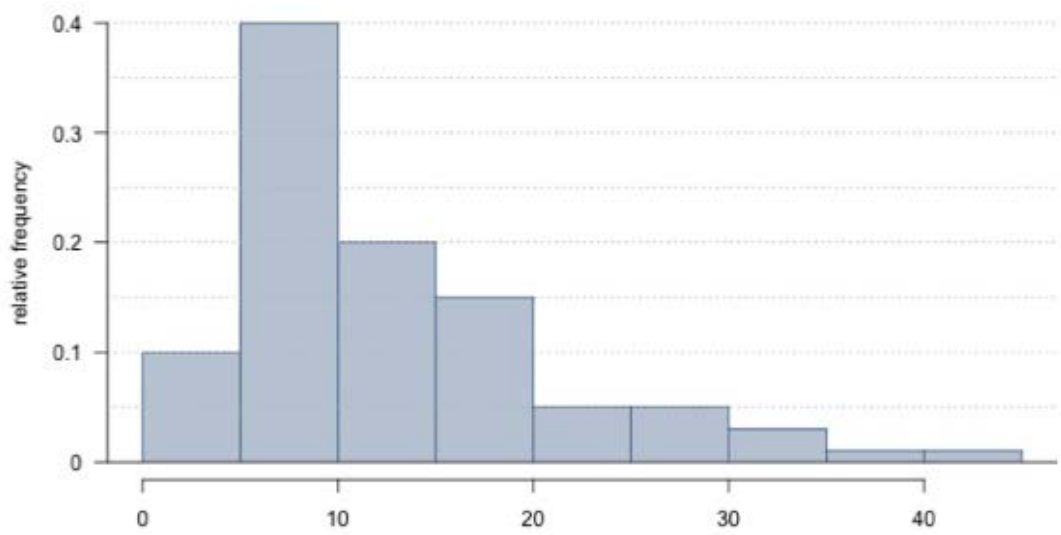
right skewed

left skewed

1 / 1 points

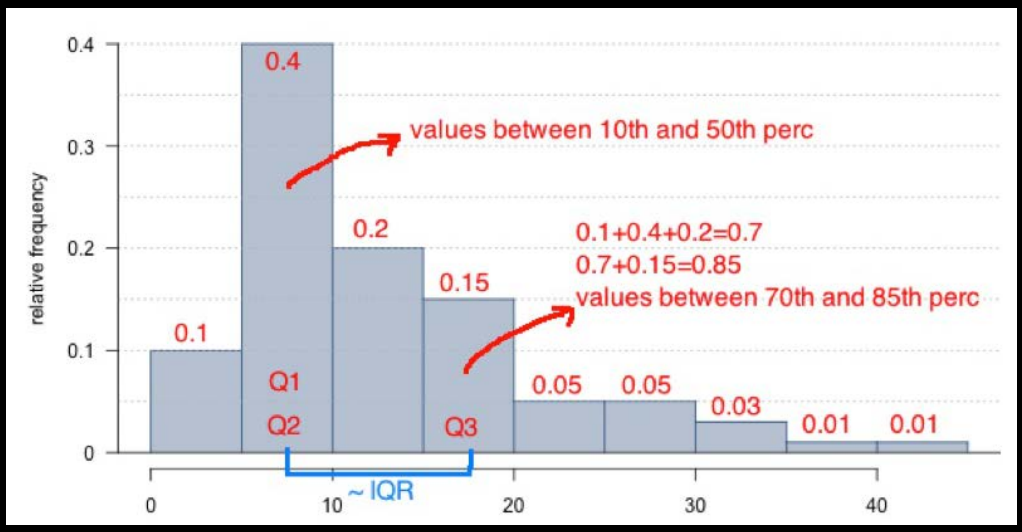
3.

Based on the relative frequency histogram below, which of the following statements is supported by the plot?



- The distribution is multimodal.
- There are no outliers in the distribution.
- The mean of the distribution is smaller than its median.
- The IQR of the distribution is roughly 10.

Correct Response



- It is not possible to estimate the median without knowing the sample size.

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0 / 1 points

4.

A recent housing survey was conducted to determine the price of a typical home in a city that is mostly middle-class, with one very expensive suburb. The mean price of a house in this city is roughly $650,000. Which of the following statements is **most likely** to be

true?

- We need to know the standard deviation to answer this question
- Majority of houses in this city cost less than $650,000.
- There are about as many houses in this city that cost more than $650,000 than less than this amount.
- Majority of houses in this city cost more than $650,000.

Incorrect Response

1 / 1 points

5.

It is relatively common for fish to be mislabeled in supermarkets and even in restaurants. The table below shows the results of a study where a random sample of 156 fish for sale were collected and genetically tested. The researchers classified each sample as being labeled properly or being mislabeled. What fraction of smoked fish in the sample were mislabeled? Choose the closest answer.

	Smoked	Not smoked	Total
Mislabeled	28	11	39
Properly labeled	8	109	117
Total	36	120	156

- 28%
- 72%
- 18%
- 9%
- 78%

Correct Response

1 / 1 points

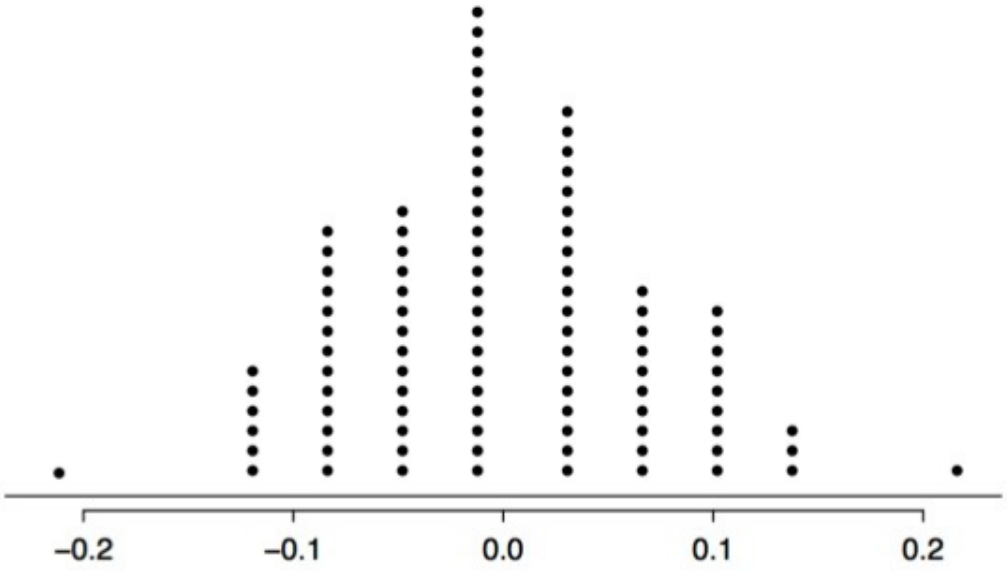
6.

In 1948, Austin Bradford Hill, designed a study to test a new treatment for tuberculosis that at the beginning of the study there was no evidence whether it would be any better or worse than bed rest. He randomly assigned some patients who volunteered to be a part of this study to receive the treatment Streptomycin, an antibiotic. The other patients

received only bed rest as the control group. Hill then observed the patients' outcomes: which patients died and which recovered. The results of the study are shown below.

	Died	Recovered	Total
Control	14	38	52
Streptomycin	4	51	55
Total	18	89	107

We use the following simulation test if there is a difference between the recovery rates under the two treatments: We write "died" on 18 index cards and "survived" on 89 index cards to indicate whether or not a patient died. Next, we shuffle the cards and deal them into two groups of 52 and 55, for control and treatment, respectively. We then calculate the simulated difference between the recovery rates in Streptomycin and control groups ($\hat{p}_{Streptomycin} - \hat{p}_{Control}$), and record this value. We repeat this simulation 100 times. The histogram below shows the distribution simulated difference between the recovery rates in these 100 simulations.

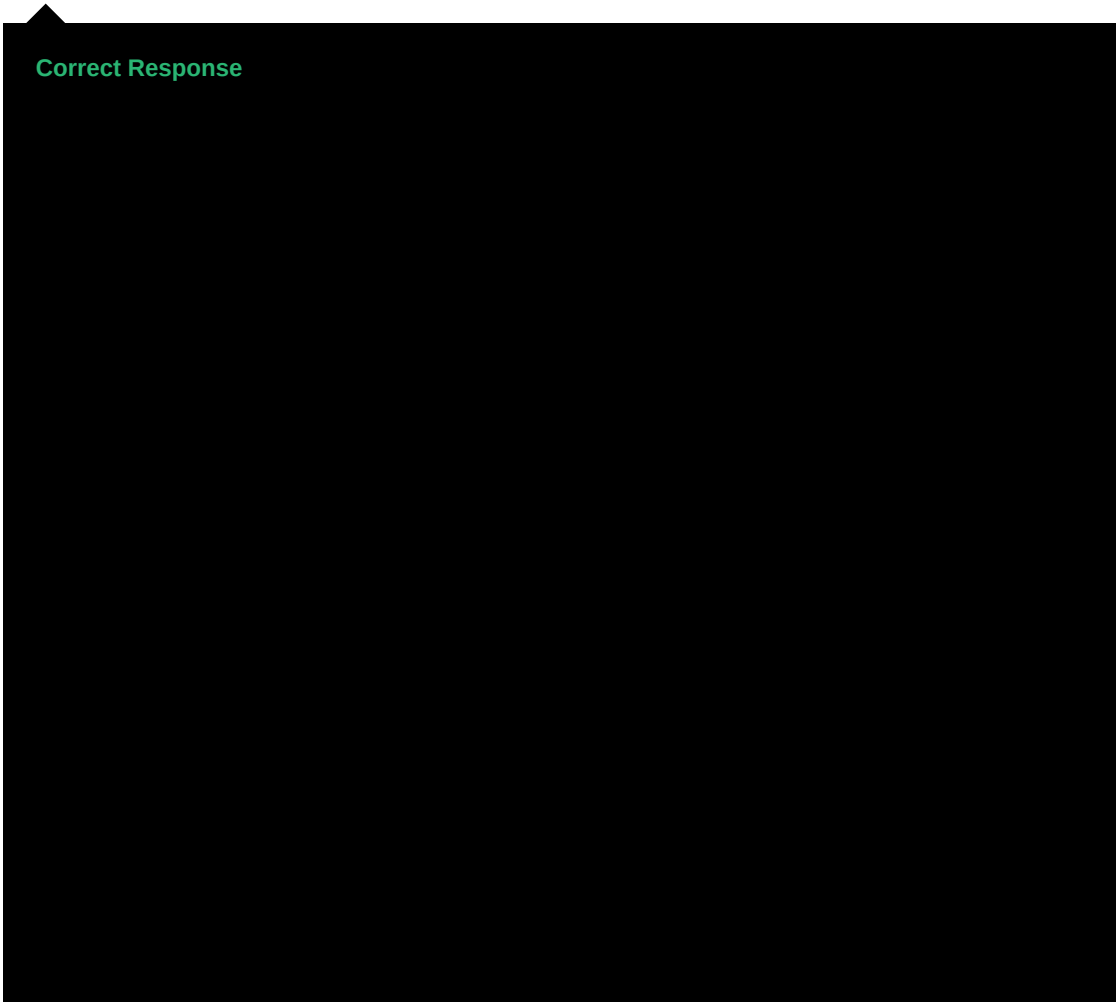


Which of the following is correct? Choose all that apply (there are multiple correct answers).

☑ Streptomycin treatment appears to be effective in treating tuberculosis since the observed difference in recovery rates would be considered unusual based on the simulation results.

Correct Response

- [ ] The difference between the survival rates in the control and treatment groups appear to be simply due to chance.



- [ ] The alternative hypothesis is that the Streptomycin treatment is more effective than bed rest.

- [x] Based on this study we can conclude a causal relationship between Streptomycin and better tuberculosis recovery rate.

Correct Response

- [x] The alternative hypothesis should be that there is a difference between the recovery rates under the two treatments.

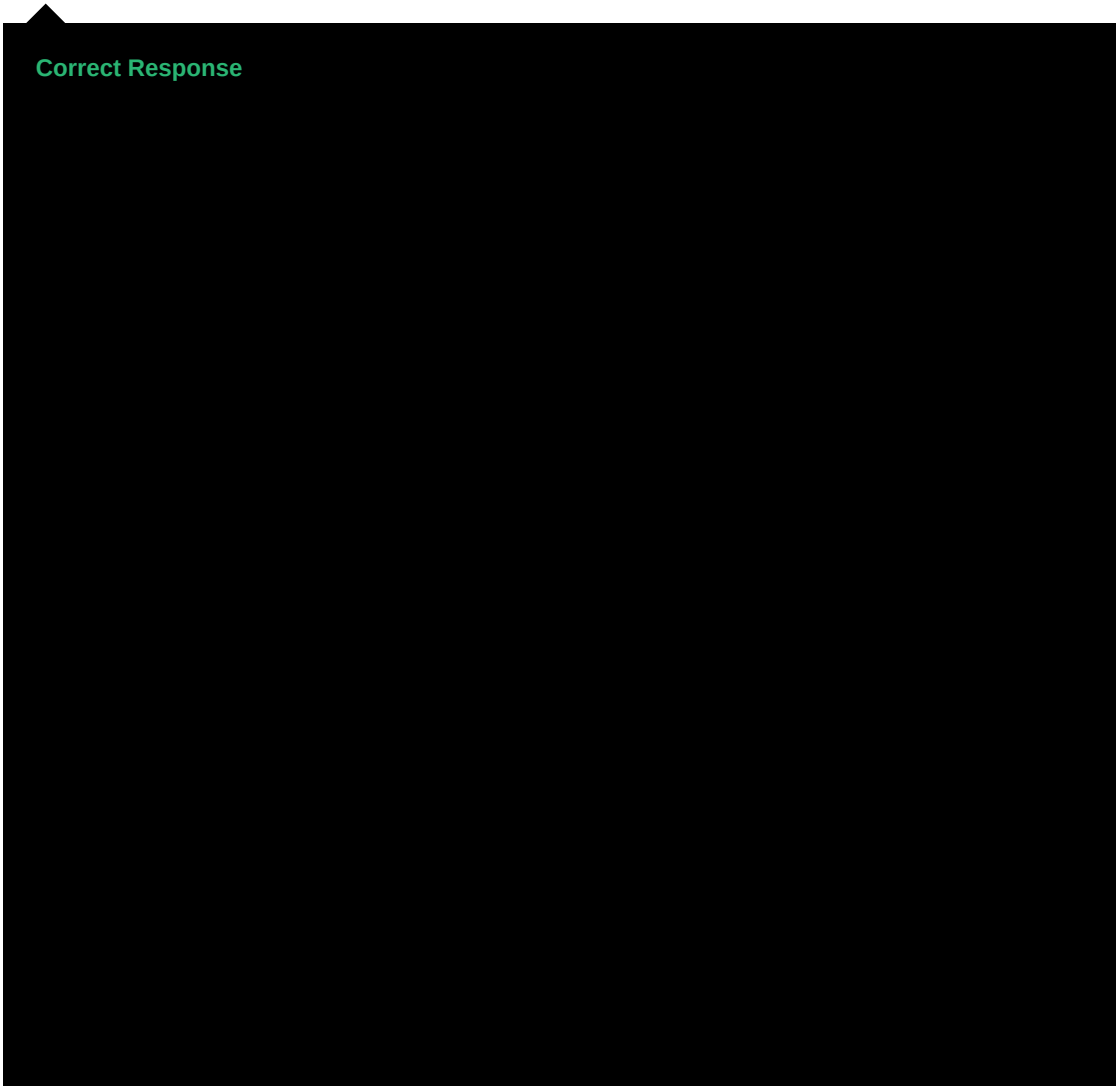
Correct Response

- [ ] Hill's study is observational.

Correct Response

☐ Streptomycin treatment does not appear to be effective in treating tuberculosis since the observed number of deaths in the treatment group would not be considered unusual based on the simulation results.

Correct Response



☑ If Streptomycin and bed rest are equally effective in curing tuberculosis, the probability of observing a difference in the recovery rates at least as high as the one observed is 2%.

Correct Response

☐ The conclusion of this study is generalizable to all tuberculosis patients.

Correct Response