

**BRIDGE Patient to Investigator Training Optional Module
Overview of Statistical Analysis Review Questions and Answer Key**

1. Which answer below describes statistical analysis?

- a. Is a branch of math
- b. Is focused on the collection, analysis and presentation of numerical data
- c. Is used in research studies to summarize quantitative data
- d. Allows data to be summarized the same across all research studies
- e. All of the above

Match the term to its definition:

2. Mean	a. Divides the data in half. After numbers are put in order smallest to largest, it is the number exactly in the middle (ex. "5" of 1, 3, 5, 6, 7)
3. Median	b. The number value that appears most often in a set of numbers. (ex. "3" of 1, 3,3, 5, 6, 7)
4. Mode	c. The average. Sum of all numbers divided by the quantity of numbers in the set (ex. $8+2+5=15 \div 3=5$)

5. Which of the following statements is NOT necessarily true about "statistically significant" data?

- a. Is not likely to have occurred by chance
- b. Is likely to be attributable to a specific cause
- c. Is reliable data
- d. Is important and worthy of using to make new decisions

6. Which of these statements is true about *p* value?

- a. It is the way in which significance is reported in statistics
- b. It measures how likely the results could have just occurred by chance.
- c. The lower the *p* value, the more "real" the results or the less likely to be from coincidence.
- d. All of the above

7. True or False: The results of a study are statistically significant when *P* value is ≤ 0.05 .

- a. True
- b. False

8. Which of the following statements about clinical significance is NOT true?

- a. Clinical significance signifies that results can have an impact on health care
- b. Clinical significance measures the importance of the results
- c. All studies that have statistical significance also have clinical significance.
- d. Clinical significance means "what we learned from the different results in the two groups studied is important and has practical applications—we should change how we provide care"

9. Which of the statements below is an example of correlation?

- a. Tall people have bigger shoe sizes
- b. If you go outside in the rain, you will get wet.

Answers:

1. e

Explanation: All of the statements are true about statistics.

2. c

3. a

4. b

Explanation: Mean is the average, median divides the numbers in half and mode is the value that appears most often

See slides 11-14 for a review of mean, median and mode.

5. d

Explanation: The statement “Is important and worthy of using to make new decisions” is a statement that would be made about data that is “clinically significant.” Data that is statistically significant is not necessarily important or decision-worthy. To be statistically significant means the numbers are reliable and the results are not just the result of a coincidence. See slide 20 for a quick review or slides 24-26 for a more in-depth review.

6. d

Explanation: All of the statements are true about p value

7. a-true

Explanation: This is the measurement for statistically significant data: p value < 0.05 . The lower the p value, the less likely the data is the result of chance or coincidence and therefore more significant.

8. c—“All studies that have statistical significance also have clinical significance.”

Explanation: This is the one statement that is NOT true about clinical significance. A study can be statistically significant without being clinically significant. If a study is statistically significant, it means the data is reliable and likely NOT the result of chance or a coincidence. BUT that does not mean the findings are important and clinically significant. To be clinically significant, the data must be significant and important enough that health care decisions would be altered or changed because of it. And that doesn't always happen. See slides 24 and 25 along with the example on slide 26 for a review.

9. a

Explanation: “Tall people have bigger shoes” is an example of a correlation. There is a relationship between height and big feet—there for the example is a correlation. “If you go out in the rain, you will get wet” is an example of causation—rain causes wetness. See slides 28-30 for a review.