

EPRS8530

Review for Exam 1

**Caution!** The questions below are not considered to be comprehensive. In other words, these are **necessary but not sufficient** knowledge items to do well on Exam 1.

1. Distinguish descriptive statistics and inferential statistics.
2. List four scales of measurement and explain each with examples.
3. What are approximate numbers?
4. Explain independent and dependent variables. Give an example.
5. State an example of a good research problem.
6. What is the null hypothesis? Why do we need the null hypothesis? Give an example.
7. How do you control extraneous variables in experimental research?
8. Discuss internal validity and external validity.
9. List types of quantitative research designs with examples.
10. Describe a process of making a frequency distribution.
11. Describe a process of making a histogram.
12. Compare and contrast a histogram vs. a polygon. Include when to use which.
13. Discuss the shape of frequency distributions. Include the discussion of skewness. Use examples.
14. Define and describe each measure of central tendency. Include when to use which.
15. Define and describe each measure of variation. Include when to use which.
16. Discuss what happens to the measures in 14 and 15 if a transformation (e.g., adding a number) is applied. Explain why. How about changing a particular score (e.g., add 10 points to the highest score)? Explain why.
17. Try to explain the standard deviation to your colleague who has never taken statistics before.
18. Discuss the relationship between central tendency and distribution shape.
19. What is effect size and how do you interpret it?
20. List properties of the normal curve.
21. Explain the normal curve to your neighbor (assuming she does not have a Ph.D. in statistics).
22. Pretend that you are a school counselor. Explain the z-score to a parent.
23. Explain how to use the z-table.
24. Show an example how to get the area under the normal curve given a z score. Use a real life example.
25. Show an example how to get the z score given the area under the curve. Use a real life example.
26. What are standard scores? Why do we need them?
27. Show various standard scores and explain how you can get them given a z-score.
28. Make a three minute speech on percentile ranks.
29. Suppose you come to Quant 1 class (in which correlation is still not introduced) and speak for 5 minutes on correlation. What would you say?
30. Explain factors that affect the size of r.
31. Give a convincing example that "correlation does not imply causation".
32. What is the coefficient of determination and how do you interpret it?
33. When would you use a simple linear regression? Give an example.