PO3110 Research Methods for Political Science
Sample examination, MT

SAMPLE

Instructions for candidates
Please follow the instructions for each section of the exam.
Please note that there are THREE sections to this exam. You should complete all sections.

Section I (20 points). (Suggested time: 18 min)

Provide a short explanation of **two** of the following terms. Use about five sentences to define and describe each term (10 points per term).

a. Covariance
b. P-value
c. Statistical significance
d. Hypothesis

Section II (20 points) (Suggested time: 18 min)

Answer **one** of the following questions. Write your answer in approximately 1 to 1.5 pages

a. How do quasi-experiments differ from laboratory experiments?
b. Discuss the importance of variation in the dependent and the independent variables to draw inferences about a particular empirical question.

Section III (60 points)
Clearly circle the correct answer associated with each question (3 points each). Suggested time: under 3 minutes per question

1. "Homeowners tend to vote more to the right of the political spectrum than tenants" is an example of a
    a. Inference
    b. Hypothesis
    c.

2. In the following hypothesis, what is "resources scarcity"? "international conflict is caused by resource scarcity".
    a. The hypothesis
    b. The inference variable
    c. The dependent variable
    d. The independent variable

3. What two parameters characterize the normal distribution?
    a. Its median and standard error
    b. Its mean and standard deviation
    c. Its skew and mode
    d. Its mode and standard deviation

4. What is necessary to compare the means of two sample groups (circle all that apply):
    a. Their regression coefficients
    b. Their means and standard deviation
    c. Their means and standard errors
    d. Their means alone

5. A Nash equilibrium is a state in which:
    a. Neither players has an incentive to defect
    b. Neither players has an incentive cooperate
    c. Neither players has an incentive to change strategy
    d. Neither player has an incentive to play a mixed strategy

6. What is the mode of the following scores: 5,6,1,2,6 ?
    a. 3
    b. 4
    c. 5
    d. 6

7. What is the standard deviation of the following scores: 1, 2 , 6 ?

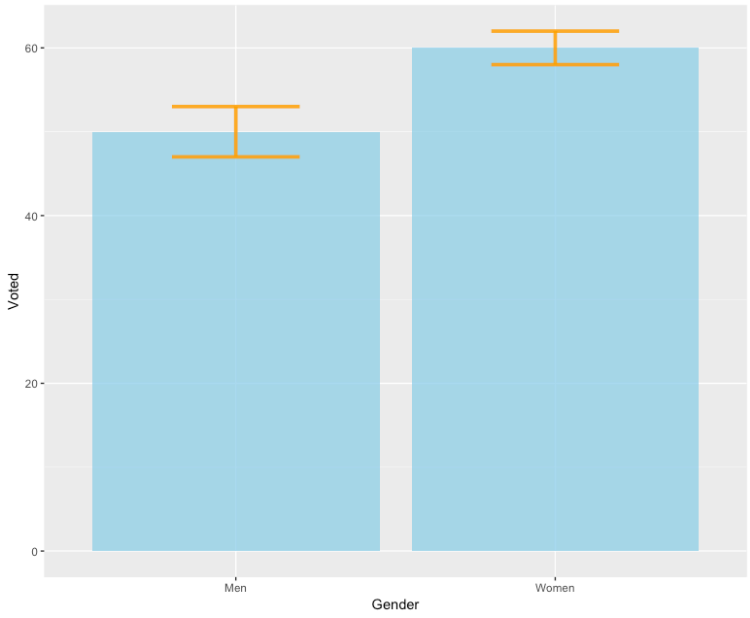
8. Consider a sample of size 100 with mean 0 and standard deviation 1. what is the standard error of the mean?
    a. 1
    b. 0.1
    c. 0.01
    d. 0.5

9. Can the standard error ever be larger than the standard deviation?
    a. Yes, it always is
    b. No, it never is
    c. Yes, but only If n < sqrt(mean)
    d. Yes, but only if n> sqrt(mean)

10. You have a 2x2 table of two variables: gender (male/female) and homeownership (1 for homeowners, 0 otherwise). The mean homeownership for males is 0.6, and 0.7 for women. Which of the following is the result of your chi-square test?
    a. 1
    b. -1

c. -2
d. -3

11. Consider the following barplots representing the mean number of voters in a group of 1000 men (left) and 1000 women (right). The orange bars represent the confidence intervals of the mean. Is there a statistically significant difference between the two groups' voting rate?
    a. Yes
    b. No
    c. It is impossible to tell
    d. Only if the number of observations is sufficiently large



12. Based on a sample of size 100 with mean 10, you are told that the standard error of the mean is 0.1. What is the sample's standard deviation?
    a. 0
    b. 0.001
    c. 0.01
    d. 0.1

13. Which of the following do you NOT need to calculate the upper bound of the confidence interval of the sample mean?

a. The sample's standard deviation
b. The number of observations in the sample
c. The p-value
d. The standard error

14. The median is always:
    a. The most frequently occurring score in a data set
    b. The middle score when results are ranked in order of magnitude
    c. The same as the mean
    d. The difference between the maximum and minimum scores.

15. Experiments are typically preferred to observational studies because of their:
    a. Internal validity
    b. External validity
    c. Construct validity
    d. Justification validity

16. A teacher gave a statistics test to his students and computed the measures of central tendency for the test scores. Which of the following statements cannot be an accurate description of the scores?
    a. The majority of students had scores above the mean.
    b. The majority of students had scores above the median.
    c. The majority of students had scores above the mode.
    d. All of the above options (a, b and c are false statements).

17. Your chi-square statistic is associated with a p-value of 0.04. Should you:
    a. reject the null hypothesis at the 0.05 level
    b. accept the alternative hypothesis at the 0.05 level
    c. Reject the standard error at the 0.05 level
    d. Accept the standard error at the 0.05 level

18. Which statistical test would you use to measure the relationship between two continuous variables?
    a. a. t test
    b. b. Spearman's correlation test.
    c. c. Pearson's Chi-square test.
    d. d. Mann-Whitney test.

19. Normally distributed data is often described as:
    a. Bell-shaped
    b. Asymmetrical
    c. Skewed
    d. Peaked

20. You are interested in whether there is a significant difference in the voting rate of young citizens compared to the overall population. Based on a sample of 100 young people, your two-tailed t-test returns a *t* value of -2.62. What do you think is the p-value associated with this t score?
    a. 0.01
    b. 0.1
    c. 1
    d. 10