Applied Research Methods II – PMAP 8131

Quiz: Sampling

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1. (1 point) The central limit theorem is a theorem about:
    A. The mean from a distribution
    B. The mean from a normal distribution
    C. The mean of the sample means from different distribution
    D. The mean of the sample means from the same distribution

2. (1 point) Calculate the 80% confidence interval for the *age* coefficient from the logistic regression below.

Coefficient	$\hat{\beta}$	$\hat{\sigma}$
age	0.056	0.025

    A. [-0.032, 0.032]
    B. [0.015, 0.097]
    C. [0.024, 0.089]
    D. [0.030, 0.081]

3. (1 point) A p-value from a two-sided test is two times the integral of the _____evaluated at (0,_____).
    A. probability distribution function, α
    B. probability distribution function, $\frac{\alpha}{2}$
    C. cumulative distribution function, α
    D. cumulative distribution function, $\frac{\alpha}{2}$

4. (1 point) Hypothesis testing is inspired by _____.
    A. Carnap's verification principle
    B. Popper's falsification principle
    C. Kuhn's revolutionary science
    D. Lakatos' research paradigms

5. (1 point) Drivers in F1 compete in teams of two. Each team runs two identical cars, therefore there are 10 unique cars on the grid. The performance of the drivers correlates to near perfection with the performance of their teammates. What is the effective driver sample size for analysis and related ICC?
    A. [20, $\approx$ 0.0]
    B. [20, $\approx$ 1.0]
    C. [10, $\approx$ 0.0]

D. [10, $\approx$ 1.0]

6. (1 point) Marco is 5'6". That puts him at 2 standard deviation below the average male height, which distributes normally. If we were to take daily measurements of male people's height, average them up, and plot the distribution over ten years of daily sampling, 5'6" would still be 2 standard deviations below the mean of the resulting distribution.
   A. True
   B. False
   C. It depends on the mean of the height distribution
   D. Not enough information is provided

7. (1 point) A researcher conducts a study to improve undergraduate placement. A pool of 500 undergraduate students is given free access to a social media app that aggregates job postings from local employers. The researcher is looking at two outcomes, employment and earnings. Variance in earnings is much larger than the variance in employment.
   A. The MDE for earnings is larger than that for employment
   B. The MDE for earnings is lower than that for employment
   C. The MDEs are the same
   D. The relative MDEs might not be evaluated with the current information

8. (1 point) Marta works as a content creator for a streaming service and is desperate to air a new show. In a small experiment, 50% of the viewers of the show have stuck around after episode one relative to 40% averaged by the shows currently hosted on the platform. How many viewers would she need to trial before she can conclude that the new show should replace the old show (at 95% confidence)? Assume that 50% remains the rate throughout the rest of the experiment.
   A. 10
   B. 25
   C. 50
   D. 100

9. (1 point) You specify a logistic regression model for the probability of passing a math exam. The model includes a constant and the dependent variables listed below. How many parameters p are you estimating?
   - *Female*: Dummy coded 0 for male, 1 for male students
   - *Age*: Continuous taking values between 16-45
   - *Ethnicity*: Categorical coded 0 for White, 1 for American Indian or Alaska Native, 2 for Asian, 3 for Black or African American, 4 for Native Hawaiian or Other Pacific Islander

   A. 6
   B. 7
   C. 8
   D. 9

10. (1 point) The coefficients from logistic regression provide effect sizes.
    A. True
    B. False
    C. It depends on the scale of the dependent variable
    D. It depends on the scale of the independent variable(s)