Poll 3 - Sampling Distribution, Confidence Intervals

EPIB607 - Inferential Statistics[a]

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Sampling distribution | Confidence interval | qnorm | pnorm

1. Which R function would we use to answer the following question: what is the probability of seeing an IQ score as extreme as 130 (select all that apply)?

1. pnorm **(Correct)**
2. qnorm
3. dnorm
4. rnorm

2. Which R function would we use to answer the following question: What is the 75th percentile of the IQ scores distribution (select all that apply)?

1. pnorm
2. qnorm **(Correct)**
3. dnorm
4. rnorm

3. The population SD is unknown and is denoted by σ. In an SRS of size n, the standard deviation of that sample is

1. the sample standard deviation **(Correct)**
2. the sample standard deviation divided by $\sqrt{n}$
3. $\sigma/\sqrt{n}$

4. The sampling distribution of $\bar{y}$ (select all that apply):

1. describes how the statistic $\bar{y}$ varies in all possible SRSs of the same size from the same population **(Correct)**
2. is Normally distributed
3. is Normally distributed only if the population distribution is Normal
4. is usually unknown **(Correct)**
5. is centered around the population mean μ **(Correct)**
6. has an SD greater than the population SD for an SRS of size n

5. The central limit theorem applies to one random sample

1. TRUE
2. FALSE **(Correct)**

6. A 95% confidence interval for the mean μ (select all that apply)

1. is a random quantity **(Correct)**
2. tells us that in the long run, 95% of your intervals will contain the mean μ **(Correct)**
3. tells us that in the long run, 95% of your intervals will contain the sample mean $\bar{y}$

7. Which of the following assumptions are needed to be able to use a formula of the form $\bar{y} \pm z^{\star}(\sigma/\sqrt{n})$ (select all that apply)

1. the population distribution must be normal
2. the CLT has 'kicked in' **(Correct)**
3. we have an SRS of size n from the population of interest **(Correct)**

8. A 95% CI for the mean μ is given by $\bar{y} \pm z^{\star}(\sigma/\sqrt{n})$. This can be calculated in R using the following command (select all that apply)

1. $\bar{y}$ + qnorm(p = c(0.025, 0.975)) $(\sigma/\sqrt{n})$ **(Correct)**
2. $\bar{y}$ + qnorm(p = c(0.025, 0.975), mean = $\bar{y}$, sd = σ) $(\sigma/\sqrt{n})$
3. $\bar{y}$ + qnorm(p = c(0.025, 0.975), mean = $\bar{y}$, sd = $\sigma/\sqrt{n}$)
4. $\bar{y}$ + qnorm(p = c(0.025, 0.975), mean = 0, sd = $\sigma/\sqrt{n}$)
5. qnorm(p = c(0.025, 0.975), mean = $\bar{y}$, sd = $\sigma/\sqrt{n}$) **(Correct)**