

07**ESTIMATION INFERENCE**

1. An advantage of the bootstrap method of estimating the standard error of sample means, compared to estimating it based on a sample variance, is that the bootstrap method:
 - (A) only requires one sample to be taken.
 - (B) is less computationally demanding.
 - (C) can be applied to complex statistics.

2. Which of the following is least likely a step in stratified random sampling?
 - (A) The population is divided into strata based on some classification scheme.
 - (B) The size of each sub-sample is selected to be the same across strata.
 - (C) The sub-samples are pooled to create the complete sample.

3. An auditor who decides to handpick rather than randomly select transactions to examine for instances of fraud is most likely using:
 - (A) cluster sampling.
 - (B) convenience sampling.
 - (C) judgmental sampling.

4. Which of the following statements regarding the central limit theorem (CLT) is least accurate? The CLT:
 - (A) gives the variance of the distribution of sample means as σ^2/n , where σ^2 is the population variance and n is the sample size.
 - (B) holds for any population distribution, assuming a large sample size.
 - (C) states that for a population with mean μ and variance σ^2 , the sampling distribution of the sample means for any sample of size n will be approximately normally distributed.

5. An analyst divides the population of U.S. stocks into 10 equally sized sub-samples based on market value of equity. Then he takes a random sample of 50 from each of the 10 sub-samples and pools the data to create a sample of 500. This is an example of:
 - (A) simple random sampling.
 - (B) stratified random sampling.
 - (C) systematic cross-sectional sampling.

6. The central limit theorem concerns the sampling distribution of the:
- (A) sample mean.
 - (B) sample standard deviation.
 - (C) population means
7. If the true mean of a population is 16.62, according to the central limit theorem, the mean of the distribution of sample means, for all possible sample sizes n will be:
- (A) 16.62.
 - (B) indeterminate for sample with $n < 30$.
 - (C) $16.62 / \sqrt{n}$
8. An equity analyst needs to select a representative sample of manufacturing stocks. Starting with the population of all publicly traded manufacturing stocks, she classifies each stock into one of the 20 industry groups that form the Index of Industrial Production for the manufacturing industry. She then selects four stocks from each industry. The sampling method the analyst is using is best characterized as:
- (A) systematic sampling.
 - (B) random sampling.
 - (C) stratified random sampling.
9. Stratified random sampling is most often used to preserve the distribution of risk factors when creating a portfolio to track an index of:
- (A) stocks.
 - (B) corporate bonds.
 - (C) alternative investments.
10. To estimate the average time Level I CFA candidates spend preparing for the exam, an employee of ABC Investments decides to randomly survey candidates who work at ABC's offices, although he is unsure how well they represent the candidate population. This is most likely an example of:
- (A) stratified sampling.
 - (B) convenience sampling.
 - (C) judgmental sampling.
11. The central limit theorem states that, for any distribution, as n gets larger, the sampling distribution:
- (A) approaches a normal distribution.
 - (B) approaches the mean.
 - (C) becomes larger

12. Which technique for estimating the standard error of the sample mean involves calculating multiple means from the same sample, each with one observation removed from the sample?
- (A) Bootstrap.
 - (B) Sample variance.
 - (C) Jackknife.
13. Which of the following is least likely a prediction of the central limit theorem?
- (A) variance of the sampling distribution of sample means will approach the population variance divided by the sample size.
 - (B) The standard error of the sample mean will increase as the sample size increases.
 - (C) The mean of the sampling distribution of the sample means will be equal to the mean.
14. According to the Central Limit Theorem, the distribution of the sample means is approximately normal if:
- (A) the sample size $n > 30$.
 - (B) the standard deviation of the population is known.
 - (C) the underlying population is normal.
15. Thomas Merton, a car industry analyst, wants to investigate a relationship between the types of ads used in advertising campaigns and sales to customers in certain age groups. In order to make sure he includes manufacturers of all sizes, Merton divides the industry into four size groups and draws random samples from each group. What sampling method is Merton using?
- (A) Stratified random sampling.
 - (B) Simple random sampling.
 - (C) Cross-sectional sampling.
16. Suppose the mean debt/equity ratio of the population of all banks in the United States is 20 and the population variance is 25. A banking industry analyst uses a computer program to select a random sample of 50 banks from this population and compute the sample mean. The program repeats this exercise 1000 times and computes the sample mean each time. According to the central limit theorem, the sampling distribution of the 1000 sample means will be approximately normal if the population of bank debt/equity ratios has:
- (A) a normal distribution, because the sample is random.
 - (B) a student's t-distribution, because the sample size is greater than 30.
 - (C) any probability distribution

17. An analyst is asked to select a sample of securities from those included in a broad based index that can be expected to have the same return as the index while preserving the key risk exposures of the index. The analyst should most appropriately use:
- (A) stratified random sampling.
 - (B) simple random sampling.
 - (C) constrained random sampling



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