Statistics 211
In-Class Assessments
Topic: Chapter 5
Date: Oct. 6, 2016

Consider the following sample of $n = 5$ observations from some population with mean μ and variance σ^2: $-1.55, 0.08, -0.87, -0.09, -0.90$.

1. Which one of the following is *not* a possible bootstrap sample?

   (a) $-1.55, -1.55, -1.55, -1.55, -0.90$

   (b) $-1.55, 0.08, -0.87, -0.90, -1.55$

   (c) $-0.09, -0.09, -0.09, 0.08, -1.55$

   (d) $-0.87, 3.00, -0.09, -0.09, -0.09$

2. Suppose we create $B = 500$ bootstrap samples and compute the sample mean $\bar{x}$ each time. If we drew a histogram of the B sample means, we would be looking at an approximation of which one of the following?

   (a) The sampling distribution of $\bar{X}$.

   (b) The population distribution.

   (c) The distribution of μ.

   (d) The distribution of σ^2.

3. Suppose we compute a 95% confidence interval of $[-1.49, 0.16]$.

   (a) Which of the following are correct statements about this interval? Select all correct answers.

      i. The probability that μ is between -1.49 and 0.16 is 0.95.

      ii. We are 95% confident that μ is in this interval.

      iii. If we were to repeat this experiment many times, 95% of all intervals constructed in this way could be expected to contain μ.

      iv. While we are confident in the interval estimate, we can not know for certain whether μ is actually contained in it.

   (b) If we *decreased* our confidence level, what would happen to the interval?

      i. The interval would get wider.

      ii. The interval would get narrower.

   (c) If we *increased* the sample size, what would happen to the interval?

      i. The interval would get wider.

      ii. The interval would get narrower.